

REMOVAL ASSESSMENT REPORT
FOR
CACTUS PIPE
SOUTH FIELDSPAN ROAD
DUSON, LAFAYETTE PARISH, LOUISIANA

Prepared for

U.S. Environmental Protection Agency Region 6

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October 2004

9016138



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EXECUTIVE SUMMARY

On 22 March 2004, the U.S. Environmental Protection Agency (EPA) tasked Weston Solutions, Inc. (WESTON®) Superfund Technical Assessment and Response Team (START-2) to perform a combined preliminary assessment of the Cactus Pipe site located in Duson, Lafayette Parish, Louisiana. The task was subsequently changed to a removal assessment. The Cactus Pipe facility refurbished salvageable oilfield production tubing for resale. Used oilfield production tubing frequently contains Naturally Occurring Radioactive Materials (NORM) in the pipe scale. Activities at the site included the removal of scale from used oilfield pipe resulting in the release of NORM and lead from pipe dope onto site soils. The removal assessment included clearing the site to provide access to all areas, conducting a radiation survey of the site and some surrounding properties, conducting screening of site soils using an X-ray Fluorescence Spectrometer (XRF), conducting an inventory of drums located throughout the site, and collecting surface and subsurface soil and sediment samples. Soil and sediment samples were analyzed for Resource Conservation and Recovery Act (RCRA) metals, Toxicity Characteristic Leaching Procedure (TCLP) metals, and NORM. The drums that were found to contain materials were sampled, and the contents were screened using hazard categorization tests. Per the request of the EPA On-scene Coordinator (OSC), START-2 coordinated with representatives of the Louisiana Department of Environmental Quality (LDEQ) during all phases of the assessment. START-2 conducted both logbook and photographic documentation of site operations during the removal assessment activities.

START-2 has prepared this Removal Assessment Report to describe the technical scope of work that was completed as part of the Technical Direction Document (TDD) No. 06-04-03-0003.

- ☐ The EPA Task Monitor did not provide final approval of this report prior to the completion date of the work assignment. Therefore, Weston Solutions, Inc. has submitted this report absent the Task Monitor's approval.
- ☒ The EPA Task Monitor has provided final approval of this report. Therefore, Weston Solutions, Inc. has submitted this report with the Task Monitor's approval.

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1. INTRODUCTION

Weston Solutions, Inc. (WESTON®) Superfund Technical Assessment and Response Team (START-2) was tasked by the U.S. Environmental Protection Agency (EPA) Region 6 Response and Prevention Branch (RPB) under Contract Number 68-W-01-005 and Technical Direction Document (TDD) No. 06-04-03-0003 (Appendix G) to provide a removal assessment at the Cactus Pipe site located in Duson, Lafayette Parish, Louisiana. The Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) Number assigned to the site is LA0000605278. The removal assessment included clearing the site to provide access to all areas, conducting a radiation survey of the site and some surrounding properties, conducting screening of site soils using an X-ray Fluorescence Spectrometer (XRF), conducting an inventory of drums located throughout the site, and collecting soil samples that were analyzed for metals and Naturally Occurring Radioactive Materials (NORM). The drums that were found to contain materials were sampled, and the contents were screened using hazard categorization tests. Per the request of the EPA On-scene Coordinator (OSC), START-2 coordinated with representatives of the Louisiana Department of Environmental Quality (LDEQ) during all phases of the assessment. START-2 has prepared this Removal Assessment Report to describe the technical scope of work that was completed as part of the TDD.

2. PURPOSE AND SCOPE

The purpose of the removal assessment was to evaluate the contamination in the soil, to inventory drums, and to characterize drum contents at the Cactus Pipe site. Previous investigations indicated that the site soils were contaminated with NORM, lead, and other metals during the refurbishing of oilfield tubing.

The scope of work defined in the TDD included the following:

- Conduct a NORM survey.
- Collect samples to document the extent and type of contamination on-site.
- Procure analytical services as needed.

The EPA OSC for this removal assessment was Warren Zehner.

3. SITE BACKGROUND

Information regarding site location, background information, and site description is presented in the following subsections.

3.1 SITE LOCATION

The Cactus Pipe site is located on South Fieldspan Road (Louisiana Highway 724), approximately 1.5 miles south of U.S. Highway 90 west of Scott, Lafayette Parish, Louisiana. The geographic center of the site is Latitude 30.218611° North and Longitude 92.141111° West, as scaled from the U.S. Geological Survey (USGS) Duson Quadrangle, 7.5-minute series topographic map. The map scale is 1:24,000 and is in the North American Datum of 1927 (NAD-27). The site is bordered to the north by a residential home and livestock grazing land and to the south by commercial property. The site is also bordered by Fieldspan Road and agricultural land to the west and livestock grazing land to the east. A Site Location Map is provided as Figure 3-1, and a Site Area Map is provided as Figure 3-2. All figures are provided as separate portable document format (PDF) files.

The site is situated on two parcels of land totaling approximately 20.525 acres. The northern parcel of land is 13.76 acres in size, and the southern parcel is 6.765 acres in size.

3.2 SITE HISTORY

The facility began operations as a pipe yard in 1971 under the name Cactus Pipe and Supply (CPS). Site operations included cleaning, threading, and distributing drill pipe for oilfield use. In 1978, CPS sold the 6.765-acre parcel to Grey Wolf Drilling. In 1980, GEO International (GEO) purchased CPS, and CPS continued to operate as a subsidiary of GEO. In 1982, GEO conveyed the land to CPS. CPS changed its name to GEO Pipe Company (GPC) in 1992. The facility ceased operations in March 1995 when GEO and GPC declared bankruptcy. On 15 May 1995, GEO abandoned the 13.76-acre parcel of land under Chapter 11 of Title 11 of the United States Code. The 6.765-acre parcel of land was purchased from Grey Wolf by Mr. John Pomier in May 1999. Mr. Pomier is the current owner of the land. Mr. Pomier operates American Waste Water Systems on property adjacent to the 6.765-acre parcel.

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3.3 REGULATORY HISTORY

In 1989, Newpark Environmental Services (NES) conducted a Phase I Assessment of the Cactus Pipe site. In 1990, NES conducted a Phase II Assessment that included the collection and analysis of soil samples. Eight composite samples were analyzed for ignitability, corrosivity, reactivity, and extraction procedure toxicity (EP Tox). None of the samples were reported with ignitable, corrosive, or reactive characteristics. All eight samples contained some concentration of EP Tox metals; however, the only analyte with a concentration in excess of a regulatory level was lead in six of the eight samples. No samples were analyzed for total concentration of lead.

In 1990, CPS conducted a NORM survey during which samples were collected from soil piles and the tube cleaning area. Analysis of the samples indicated that site soils were contaminated with NORM.

In April 2000, the START contractor was tasked by the EPA Region 6 RPB to conduct a Preliminary Assessment at the Cactus Pipe site under TDD No. S06-99-12-0002. Due to the termination of the START contract, only a site historical data review and a drum inventory were conducted.

3.4 SITE DESCRIPTION

The southern parcel of the Cactus Pipe site was remediated prior to being sold to Mr. Pomier, and now consists of an open pasture that is used to keep horses. A drainage ditch flows north through both sections of the site. Another drainage ditch flows north along the eastern boundary of the site. Both drainage ditches empty into a ditch along the northern boundary of the site that flows to the east. The ditch empties into Coulee Ile des Cannes, which empties into the Vermilion River. The Vermilion River empties into Vermilion Bay, which is connected to the Gulf of Mexico.

According to historical information, most of the CPS activities took place on the northern parcel. As shown in Figure 3-3, the northern parcel includes six structures and numerous areas where other structures once stood. Approximately 151 drums are scattered throughout the site, including a “drum pile” near the eastern edge of the site. Two soil piles are located on the site:

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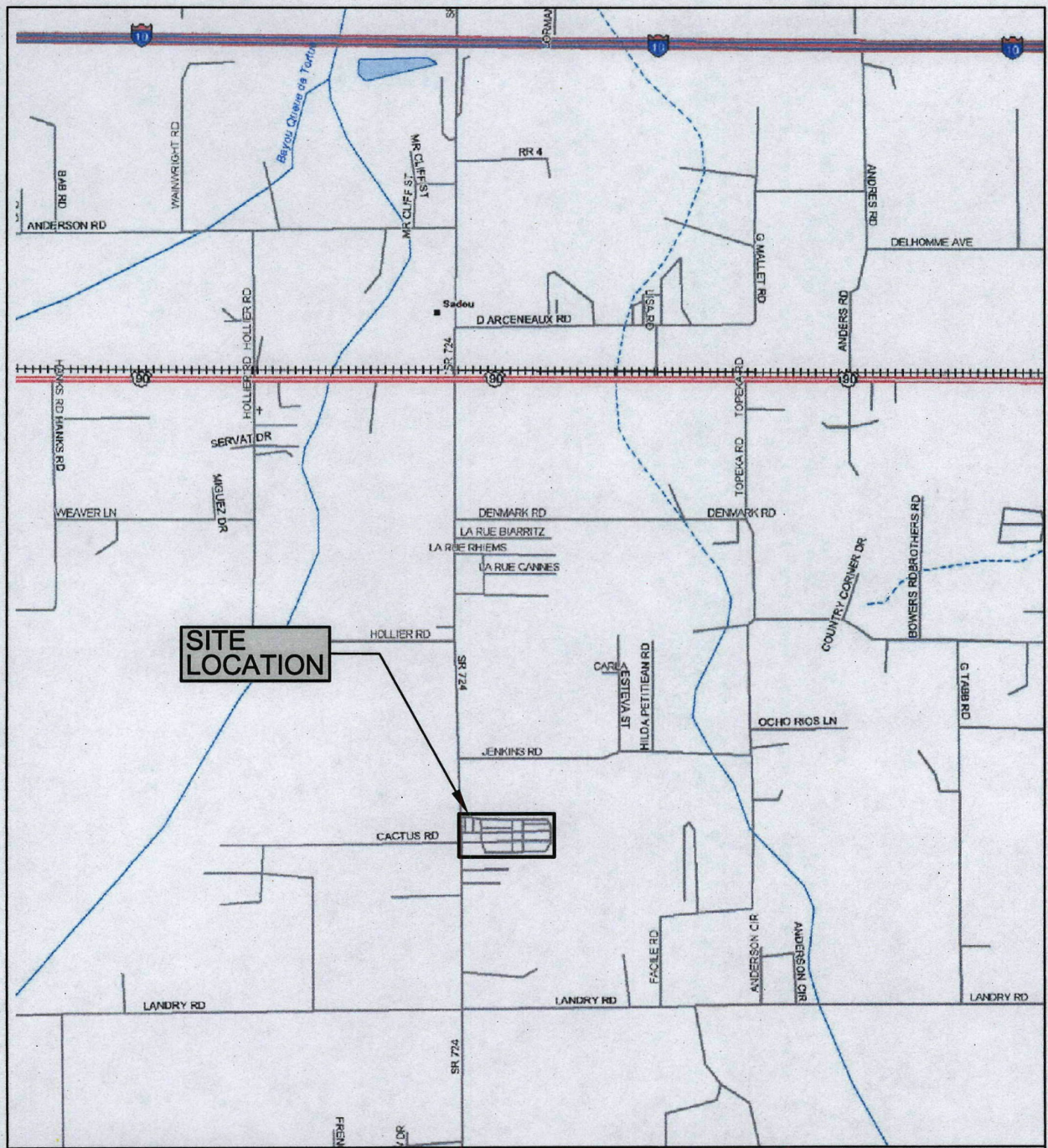
one near the south edge of the northern parcel (P1) and one near the east end of the site (P2). Both soil piles had signs posted warning of a radiation hazard; however, a radiation scan of the site indicated that only P1 contained radiation levels above background.

Other areas of interest that are shown on the site sketch (Figure 3-3) include a former casing cutter area (A1), a fuel storage area (A2), a former machine shop (A3), a front casing hydrotesting area (A4), a rear casing hydrotesting area (A5), a casing inspection area (A6), the vehicle maintenance area (A7), and two drum areas (A8 and A9). According to historical information, most CPS activities were concentrated west of the drainage ditch, and the east side of the site was used primarily to store oilfield tubing. The northern parcel of the site was overgrown with weeds, brush, and small trees that had grown since the site was abandoned.

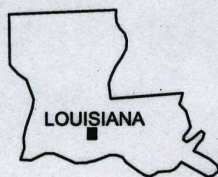
**Figure 3-1
Site Location Map**

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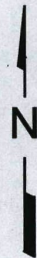
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SOURCE: DELORME STREET ATLAS USA DELUXE
DUSON, LOUISIANA



0 920 1840
SCALE IN FEET



US EPA REGION 6 START-2

Figure 3-1 SITE LOCATION MAP CACTUS PIPE

DUSON, LAFAYETTE PARISH, LOUISIANA

CERCLIS No.: LA0000805278
TDD No.: 06-04-03-0003

DATE:
8-23-04

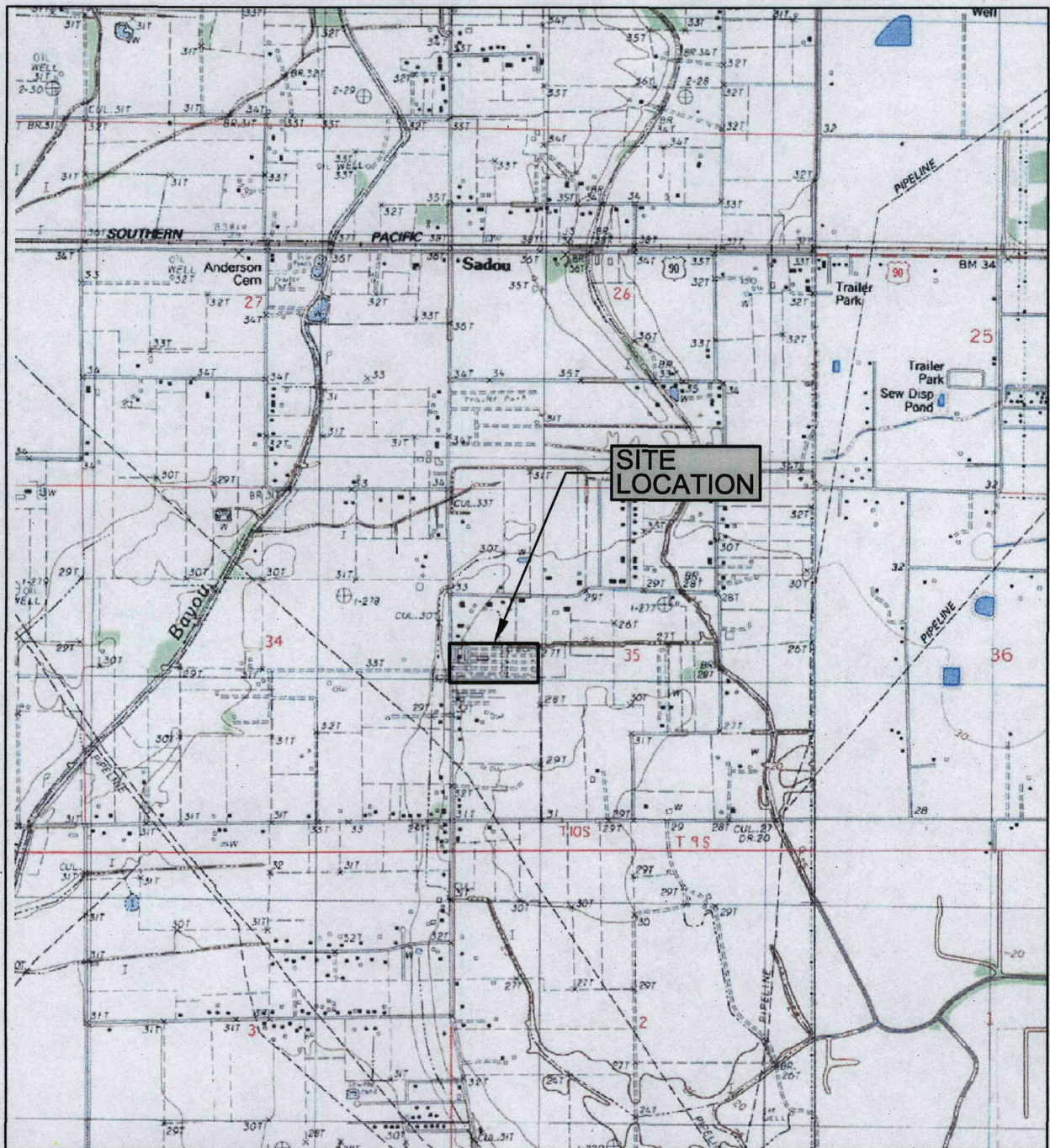
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1" = 1840'

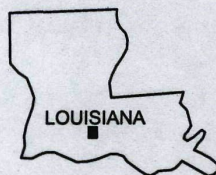
**Figure 3-2
Site Area Map**

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SOURCE: USGS 7.5-MINUTE TOPOGRAPHIC MAP
DUSON, LOUISIANA



0 1050 2100
SCALE IN FEET



**US EPA REGION 6
START-2**

**FIGURE 3-2
SITE AREA MAP
CACTUS PIPE**

DUSON, LAFAYETTE PARISH, LOUISIANA

CERCLIS No.: LA0000805278
TDD No.: 08-04-03-0003

DATE:
8-23-04

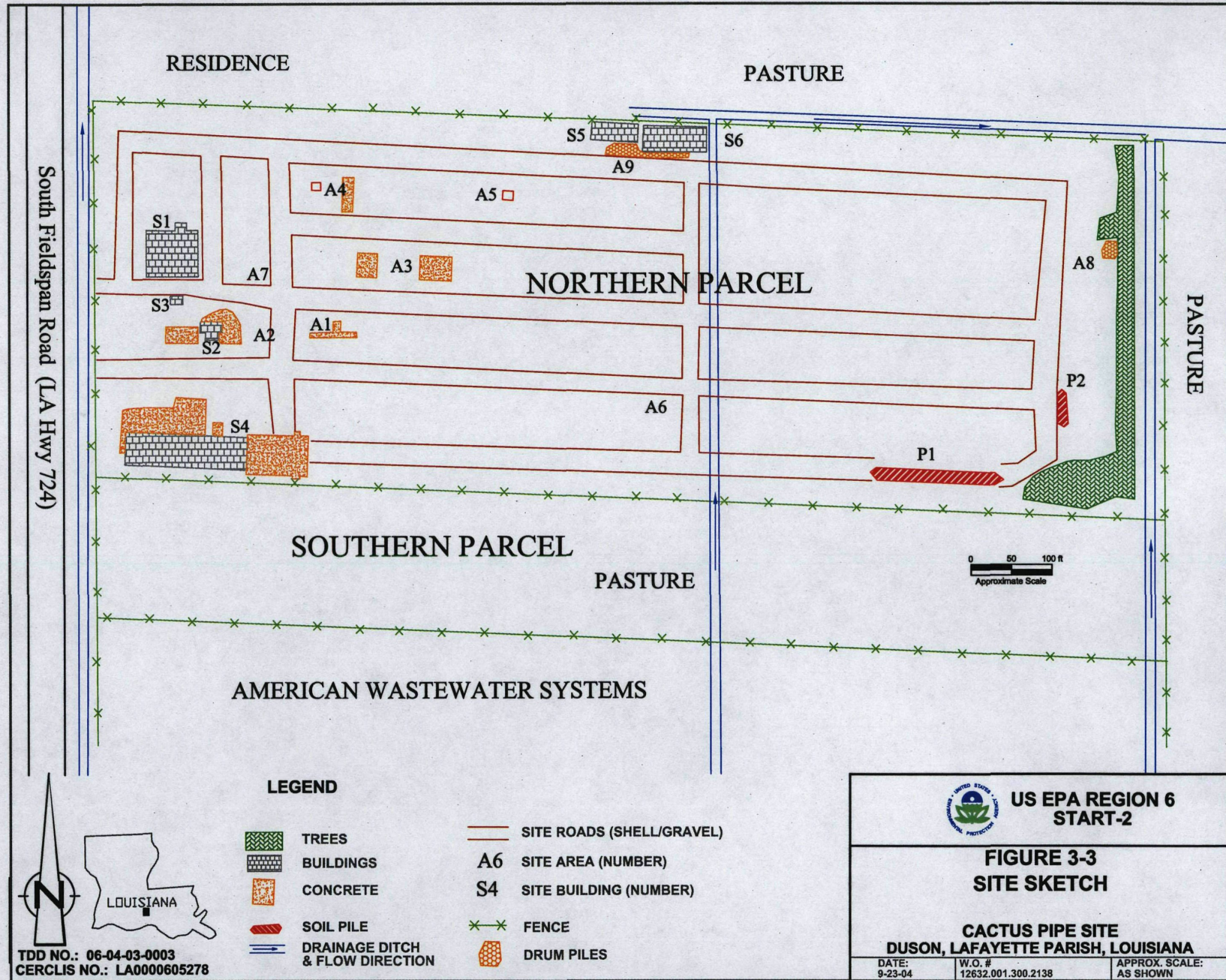
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**Figure 3-3
Site Sketch**

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4. ACTIONS TAKEN

On 25 March 2004, START-2 traveled to CPS for a preliminary site visit to assess current conditions. EPA OSC Zehner and LDEQ representative Regina Philson accompanied START-2 to the site. The site was found to be overgrown with weeds, brush, and small trees. During the removal assessment, START-2 had the site cleared, contracted for a radiation survey, divided the site into grids, conducted in situ XRF screening of the entire site, conducted soil sampling, and sampled drums that were spread throughout the site. Site activities were hampered due to more than 25 inches of rain during May and June 2004.

4.1 SITE CLEARING

To facilitate investigative activities, it was determined that a majority of the site would require clearing. START-2 contracted EDI Environmental Services, Inc. (EDI) to clear the brush and small trees from the site. From 4 through 6 May 2004, EDI utilized a bulldozer, a bobcat-mounted bush-hog, and a tractor-mounted bush-hog to clear the site. The small trees were stockpiled throughout the site. START-2 utilized a Bicron Surveyor M Gamma Radiation Detector to verify that the stockpiles were not situated on areas with NORM contamination.

4.2 RADIATION SURVEY

START-2 contracted American Radiation Services, Inc. (ARS) of Port Allen, Louisiana, to conduct a radiation survey of the site. The survey was conducted on 27 May 2004, utilizing two Large Area Plastic Scintillation (LAPS) detectors mounted on a four-wheel drive all terrain vehicle. A Global Positioning System (GPS) unit mounted on the vehicle provided spatial coordinates as the detectors measured gamma radiation. A map showing the results of this survey is presented as Figure 4-1. This survey indicated several areas of elevated radiation near the northern fence line of the site. A second survey was conducted on 30 July 2004, on the residential properties north of the site. This survey indicated that the contamination did not extend onto the properties to the north. A map showing the combined results of both surveys is presented as Figure 4-2. The background for the site was approximately 800 gross counts per second.

4.3 XRF SCREENING

START-2 developed a Quality Assurance Sampling Plan (QASP) that included all XRF screening and soil sampling activities. The QASP is included as Appendix A

START-2 used an XRF to screen site soils to determine the extent of lead contamination and to determine locations for soil sampling. From 29 through 30 June 2004 and from 13 through 14 July 2004, START-2 used a survey instrument to establish a grid system on the site. The grid spacing was 50 feet in the western portion of the site, and 100 feet in the eastern portion as shown in Figure 4-3. The 50-foot grid spacing was used for those areas that appear to have been used for pipe cleaning or other activities. The 100-foot grid spacing was used for those areas that appear to have been used for pipe storage and layout. Samples were identified using the node at the northeast corner of the grid. There were approximately eighty 50-foot grids and forty 100-foot grids on the site.

The XRF instrument used was an Innov-X hand-held portable XRF analyzer. According to the manufacturer's specifications, this XRF has a lower detection limit of approximately 15 parts per million (ppm) and an upper detection limit of 3% to 5% lead. The manufacturer recommends an analysis time of 45 to 60 seconds to screen soil for 95% confidence with an action limit of 300 to 400 ppm. According to the manufacturer, the moisture content of the soil does not affect the performance of the XRF analyzer; however, soil should not be analyzed through standing water.

Each 50-foot grid had five screening points as recommended by the Superfund Program Representative Sampling Guidance (EPA 540/R-95/141). Two analyses were made at each point, moving the XRF a few inches between the first and second analysis. The results of the 10 screening analyses were averaged to obtain the screening value for the grid.

Each 100-foot grid had nine screening points as recommended by the Superfund Program Representative Sampling Guidance (EPA 540/R-95/141). Two analyses were made at each point, moving the XRF a few inches between the first and second analysis. The results of the 18 screening analyses were averaged to obtain the screening value for the grid.

When grids along the northern or southern fence lines of the site indicated screening values of

more than the proposed cleanup level of 500 ppm of lead, grids were created on the adjacent properties and screened with the XRF. This continued until the site was encircled by grids exhibiting concentrations of lead below 500 ppm.

Grid sizes and shapes were modified in some locations due to fence lines, buildings, concrete, and other site features. Such modifications of grids were documented in the site logbook.

Some grids contained standing water, which prevented in situ analysis with the XRF. In these grids, composite soil samples were collected into a re-sealable plastic bag using the same five or nine point sampling scheme that was used for in situ analysis. The soil was then dried and homogenized. The soil was analyzed five times with the XRF analyzer, with the soil re-homogenized between each analysis. The results of the five screening analyses were averaged to obtain the screening value for the grid.

START-2 collected soil samples from 0 to 1 inch, 4 to 8 inches, and 8 to 12 inches below ground surface (bgs) from locations in five grids with high lead readings on the initial XRF scan (grids C3, C7, D4, D7, and F7). These soil samples were dried, homogenized, and analyzed five times with the XRF analyzer, with the soil re-homogenized between each analysis. The results of the five screening analyses were averaged to obtain the screening value for the grid.

4.4 SOIL AND SEDIMENT SAMPLING

4.4.1 Lead Samples

From 9 through 10 September 2004, START-2 collected soil samples from the same grid system used during the XRF survey to determine the extent of lead contamination in the soil and to confirm XRF screening values. Surface soil samples were collected from eight grids that contained a wide range of concentrations of lead during the XRF screening (samples LCB2, LCC21, LCC4, LCD5, LCD9, LCE13, LCG25, and LCH6), shown in Figure 4-4. Surface soil samples consisted of a five-point composite for 50-foot grids or a nine-point composite for 100-foot grids. The samples were collected from 0 to 4 inches bgs. Each aliquot was placed in a dedicated plastic re-sealable bag and thoroughly homogenized. The soil was analyzed five times with the XRF analyzer, with the soil re-homogenized between each analysis. The results of the

five screening analyses were averaged to obtain the screening value for the grid. The soil samples were then submitted to a laboratory for Resource Conservation and Recovery Act (RCRA) metals analysis.

Subsurface soil samples were collected at two depths from three grids that contained high concentrations of lead during the XRF screening (LCC4-4-8, LCD5-4-8, LCD9-4-8, LCC4-8-12, LCD5-8-12, and LCD9-8-12), as shown in Figure 4-4. The suffix at the end of each sample number denotes the subsurface depth (i.e., 4 to 8 inches and 8 to 12 inches). The subsurface soil samples consisted of a five-point composite and were collected utilizing a Geoprobe subsurface coring device with acetate tubing. Core samples were collected from 4 to 8 inches and 8 to 12 inches bgs within the disposable acetate sleeves. Corresponding depth intervals were placed in a dedicated plastic re-sealable bag and thoroughly homogenized. The soil was analyzed five times with the XRF analyzer, with the soil re-homogenized between each analysis. The soil samples were then submitted to a laboratory for RCRA metals analysis.

Eight sediment samples were collected from drainage paths leading from the site (LGDr1 through LGDr8). The soil samples were then submitted to a laboratory for RCRA metals analysis. The sediment samples that were dry enough were screened with the XRF prior to sending for RCRA metals analysis. Figure 4-5 shows the drainage sample locations that were analyzed for RCRA metals analysis.

The RCRA metals samples collected at the Cactus Pipe site were sent to Gulf Coast Analytical Laboratories in Baton Rouge, Louisiana, for analysis. Samples were analyzed by EPA Method 6010B.

4.4.2 TCLP Samples

On 9 September 2004, START-2 collected four surface soil samples for the analysis of Toxicity Characteristic Leaching Procedure (TCLP) metals (samples TCC6, TCC9, TCE6, and TCF9). TCLP samples were collected in areas in which the XRF survey had indicated very high concentrations of lead in the soil. Figure 4-6 shows the locations of the TCLP metals soil samples.

The TCLP samples collected at the Cactus Pipe site were sent to Gulf Coast Analytical

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Laboratories in Baton Rouge, Louisiana, for analysis. Samples were extracted by EPA Method 1311 and analyzed by EPA Method 6010B.

4.4.3 NORM Samples

From 8 through 10 September 2004, START-2 collected soil samples to determine the concentration of NORM in the soil. NORM samples were collected in areas in which the NORM survey determined that the concentration of radioactive material was above background.

START-2 collected four surface composite soil samples from 50-foot grids that were shown to be contaminated during the NORM survey. The samples consisted of a five-point composite collected from 0 to 4 inches bgs (samples NCA2, NCC2, NCC3, and NCB3). Three five-point composite samples including a duplicate were collected from within building S1, samples NCS1E (and the duplicate NCS1D) and NCS1W. An additional composite sample, labeled NCEAST, was collected from an area including portions of grids C17 and E17. The composite samples were all collected from areas that were shaded green on Figure 4-2, and Figure 4-7 depicts the locations of the composite soil samples sent for NORM analysis.

START-2 collected seven surface grab soil samples including one duplicate from locations that were shown to be contaminated during the NORM survey (samples NGA8, NGA8D, NGA10, NGB5, NGB7, NGC17A, and NGC17B). START-2 also collected a surface grab soil sample from a residential property north of the site (sample NGDU) and a grab sediment sample from the drainage ditch in grid C17 (sample NGDr9).

START-2 collected four subsurface grab soil samples from locations where surface soil samples were collected (samples NGA8-14-18, NGA10-15-19, NGS1-16-20, and NGC17A-8-12). The suffix at the end of each sample number denotes the subsurface depth (i.e., 14 to 18 inches, 15 to 19 inches, 16 to 20 inches, and 8 to 12 inches)

START-2 collected five subsurface grab soil samples from the bottom of soil pile P1, samples NGP1A-B, NGP1B-B, NGP1C-B, NGP1D-B, and NGP1E-B (-B designates samples collected from the bottom of the pile), and one surface soil sample from the top of soil pile P1 (sample NGP1D). START-2 collected two subsurface grab soil samples from the bottom of soil pile P1 (samples NGP2A-B and NGP1B-B). Figure 4-8 depicts the locations of the grab soil samples

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sent for NORM analysis.

The NORM samples collected at the Cactus Pipe site were sent to American Radiation Services in Port Allen, Louisiana, for analysis. Samples were analyzed for NORM by EPA Method 901.1M.

Samples were collected in general accordance with the QASP (see Appendix A) and EPA/ERT SOP No. 2001 – *General Field Sampling Guidelines*.

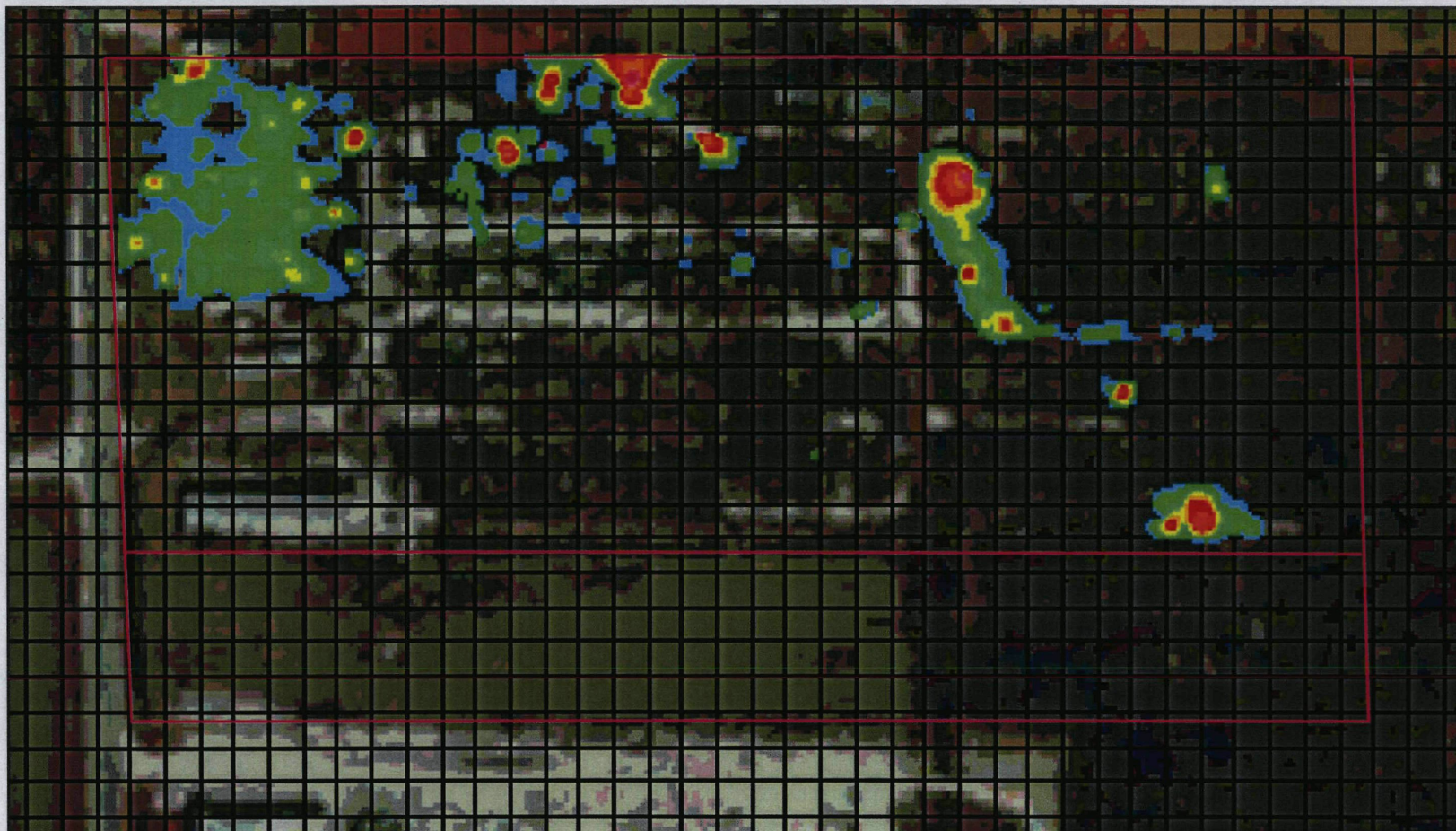
4.5 DRUM SAMPLING

Approximately 151 drums and other containers were spread throughout the site. START-2 conducted an inventory of the drums, noting the location, condition, label information, and contents of each drum. Most of the drums were severely rusted or had holes and were empty or contained trash or rainwater. A list of the drums and containers on site is presented in Table 4-1. Thirteen of the drums appeared to be intact and could possibly contain material that could be sampled. On 1 September 2004, START-2 collected samples from 13 drums. The contents of the drums were tested using hazard categorization field chemistry tests. The hazard categorization field sheets are presented as Appendix E. Of the 13 drums tested, only 2 drums could be classified as hazardous waste based on the characteristic of corrosivity.

Figure 4-1
Results of First NORM Survey 27 May 2004

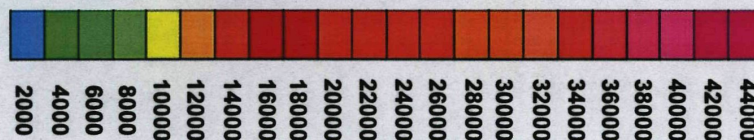
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→ ← 20 Meters

GROSS COUNTS PER SECOND



TDD NO.: 06-04-03-0003
CERCLIS NO.: LA0000605278



US EPA REGION 6
START-2

FIGURE 4-1
RESULTS OF FIRST NORM SURVEY
27 MAY 2004

CACTUS PIPE SITE
DUSON, LAFAYETTE PARISH, LOUISIANA

DATE:
9-23-04

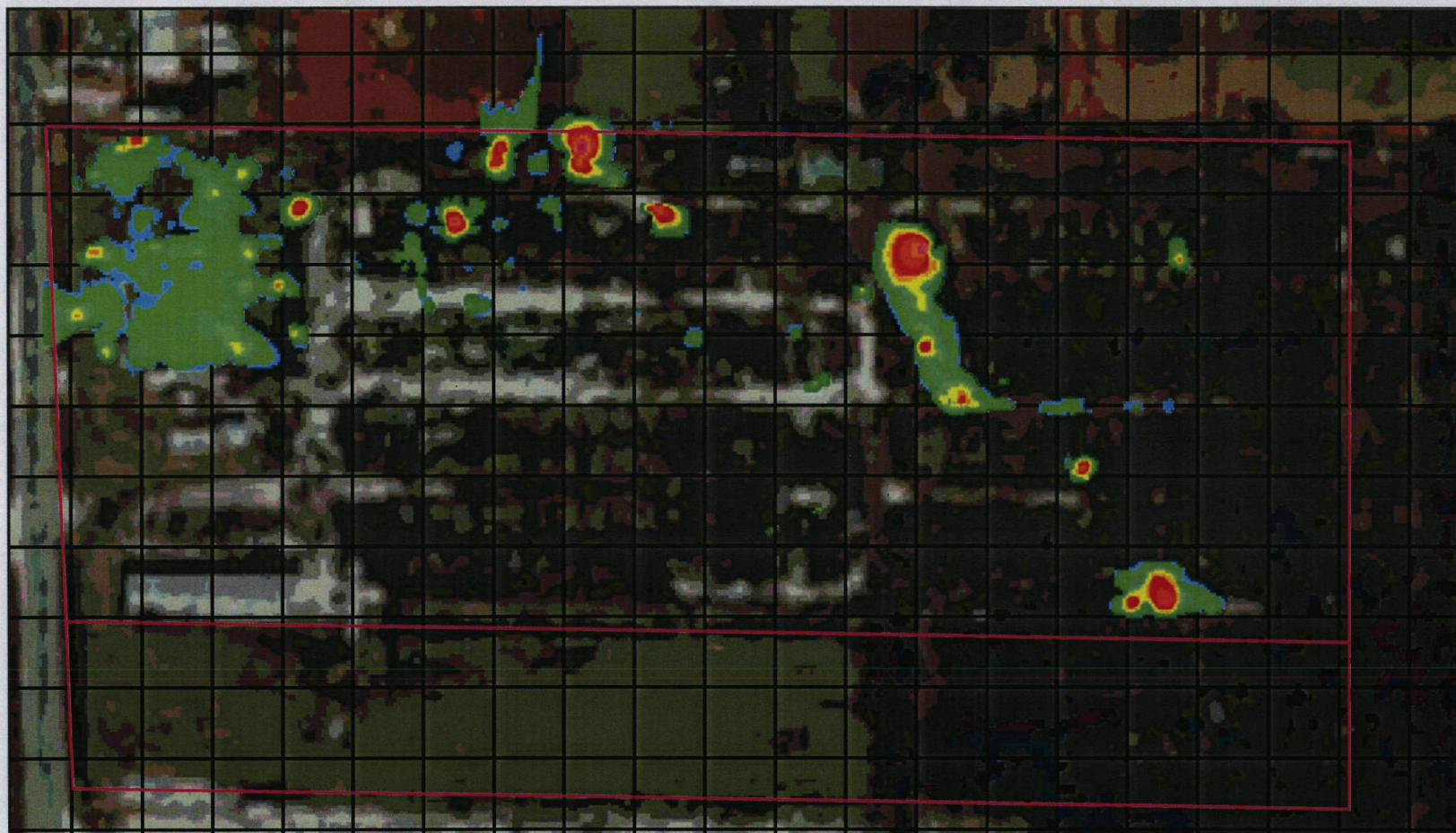
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APPROX. SCALE:
AS SHOWN

Figure 4-2
Results of Both NORM Surveys 27 May 2004 and 30 July 2004

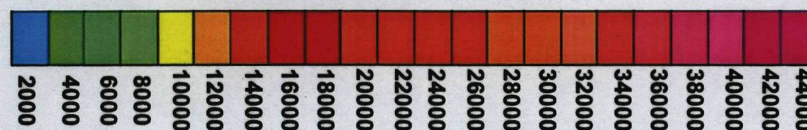
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→ ← 20 Meters

GROSS COUNTS PER SECOND



TDD NO.: 06-04-03-0003
CERCLIS NO.: LA0000605278



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START-2

FIGURE 4-2
RESULTS OF BOTH NORM SURVEYS
27 MAY 2004 AND 30 JULY 2004

CACTUS PIPE SITE
DUSON, LAFAYETTE PARISH, LOUISIANA

DATE:
9-23-04

W.O. #
12632.001.300.2138

APPROX. SCALE:
AS SHOWN

**Figure 4-3
Site Grid System**

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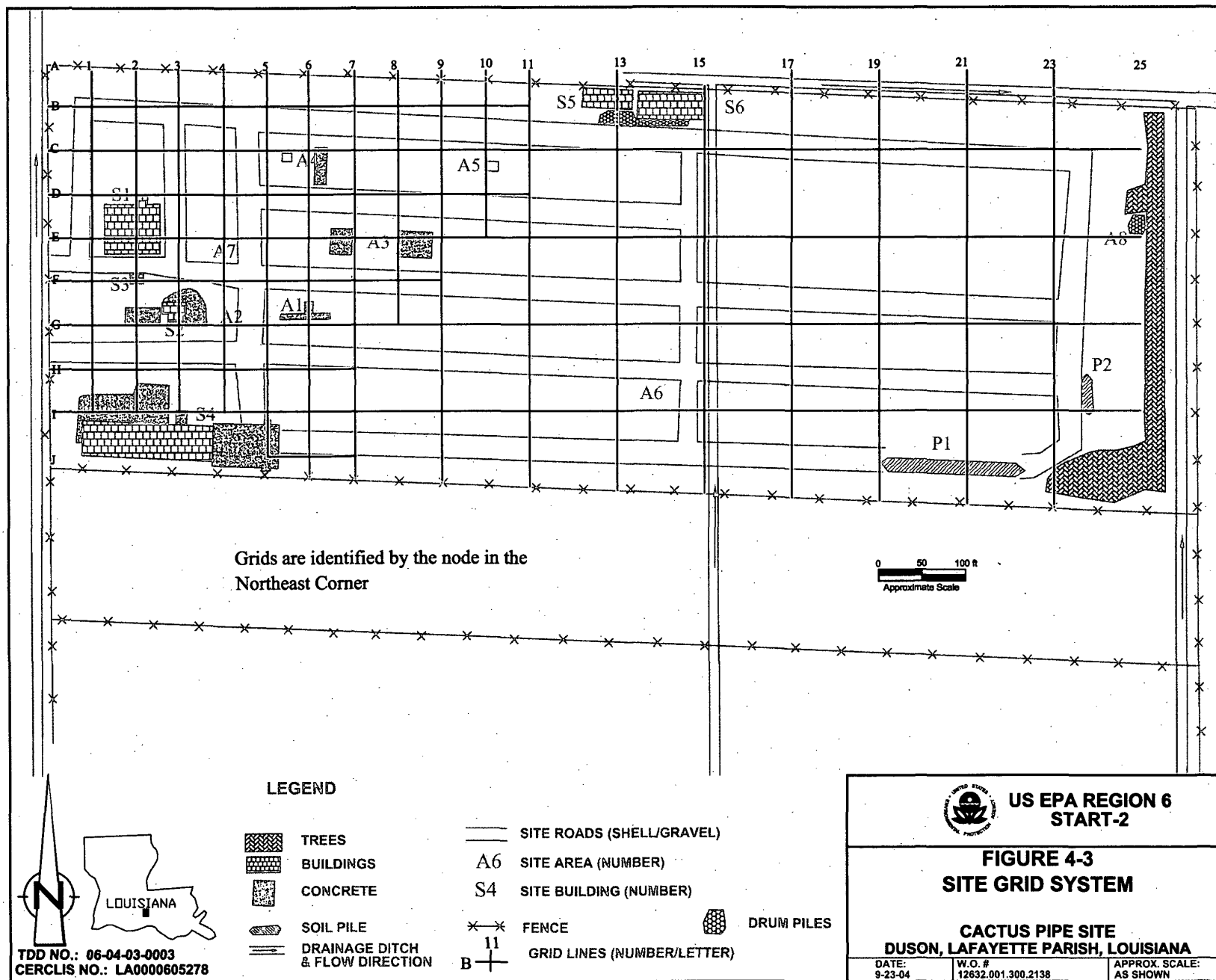


Figure 4-4
RCRA Metals Soil Sample Locations

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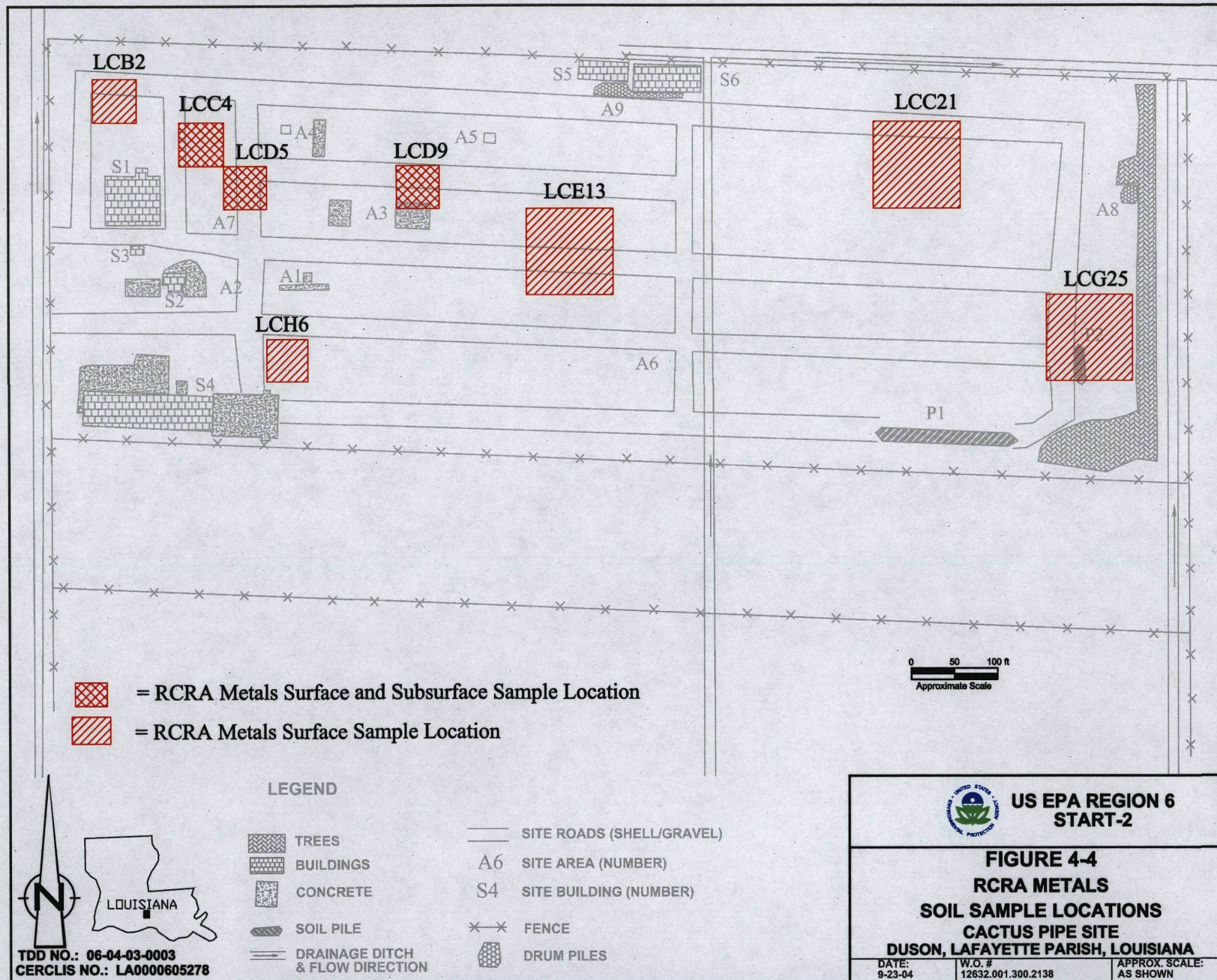


Figure 4-5
RCRA Metals Drainage Sample Locations

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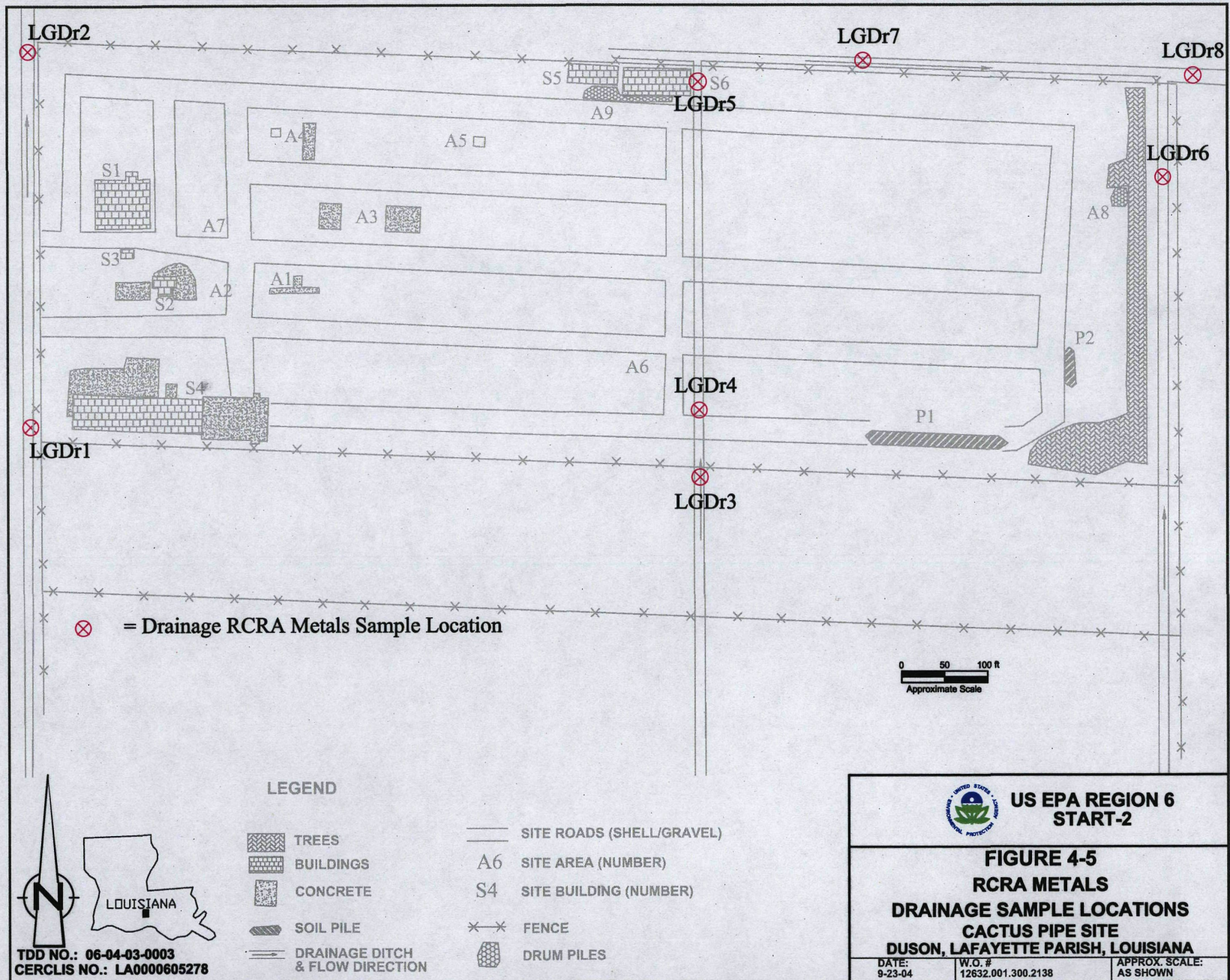


Figure 4-6
TCLP Metals Soil Sample Locations

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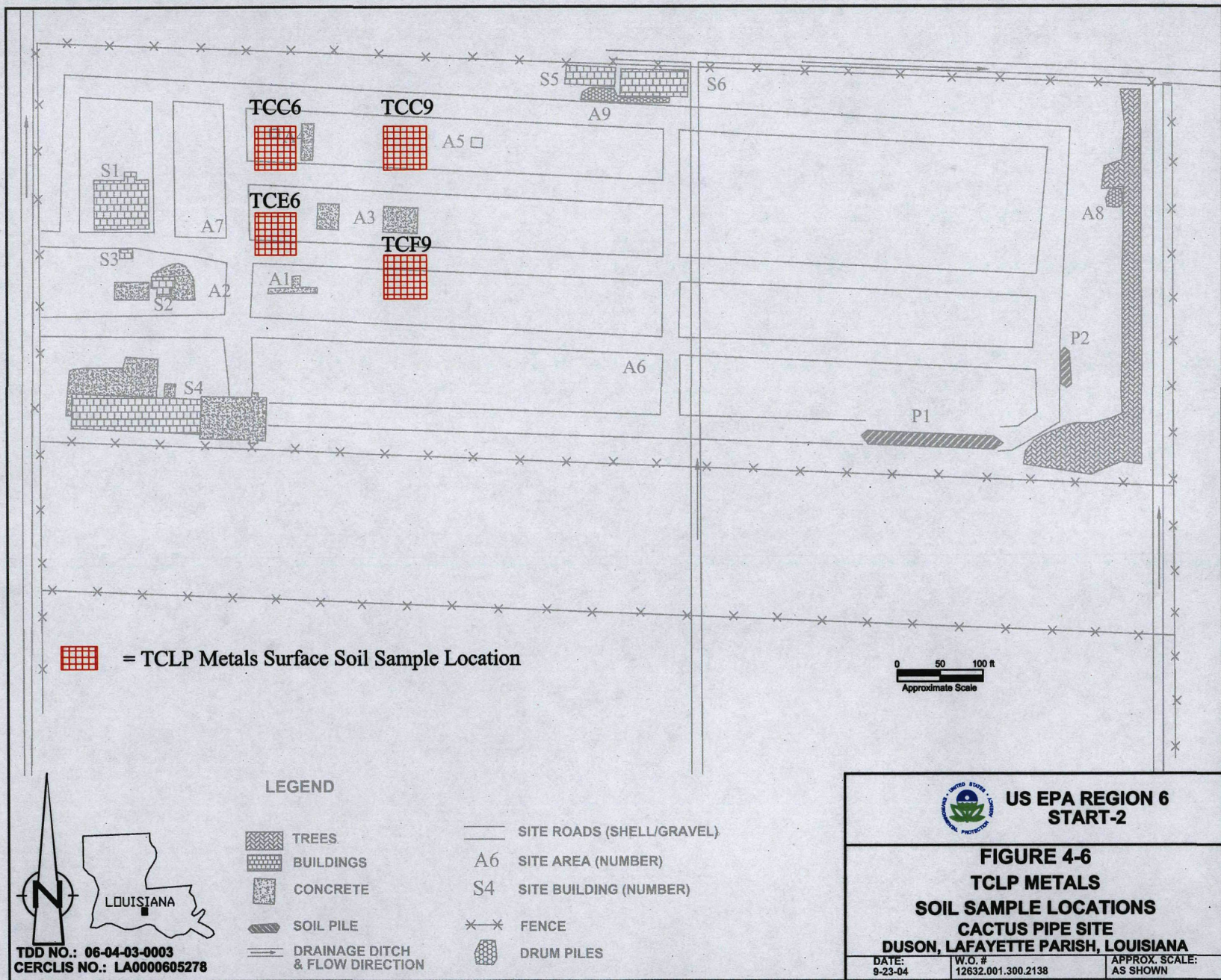


Figure 4-7
NORM Composite Soil Sample Locations

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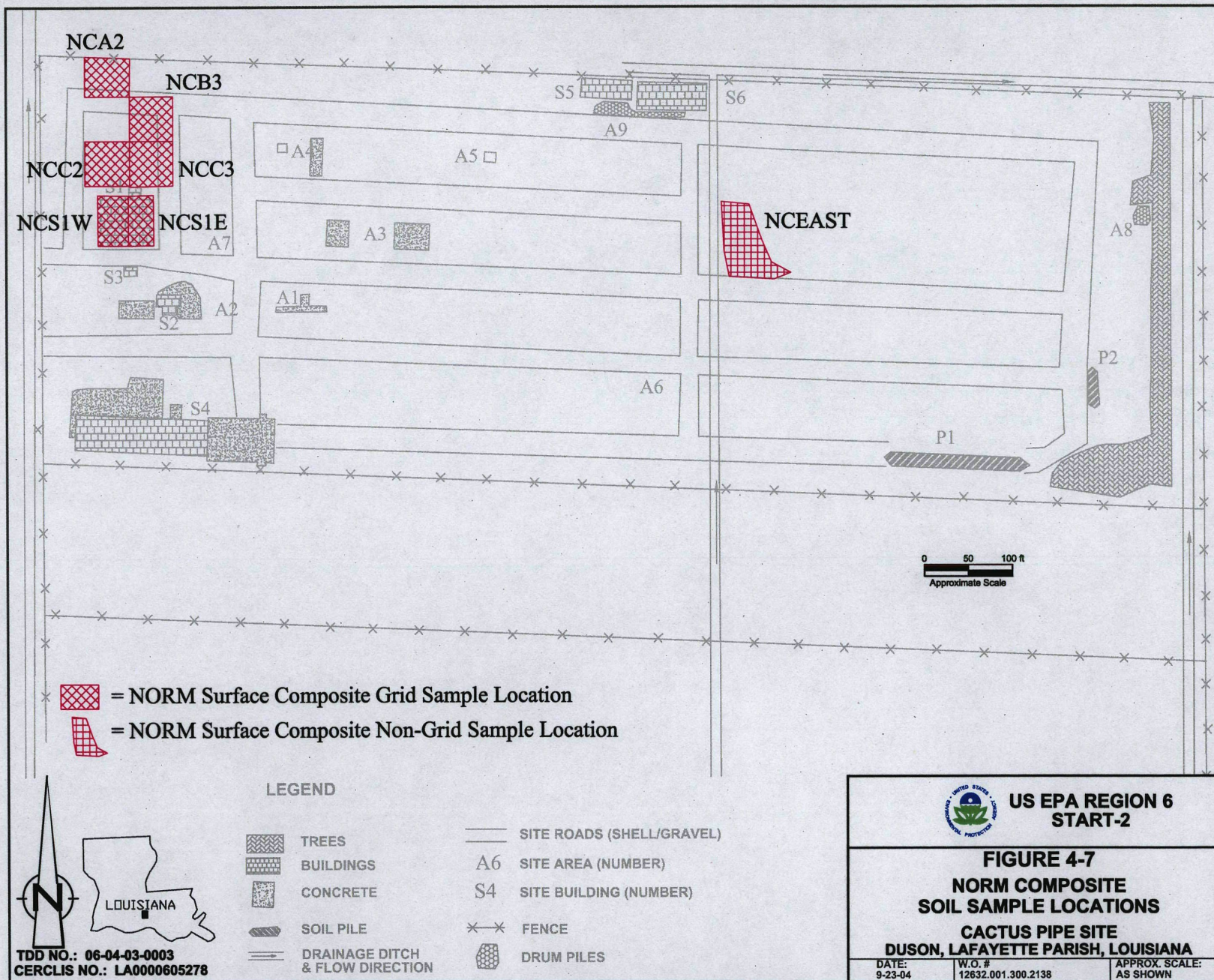


Figure 4-8
NORM Grab Soil Sample Locations

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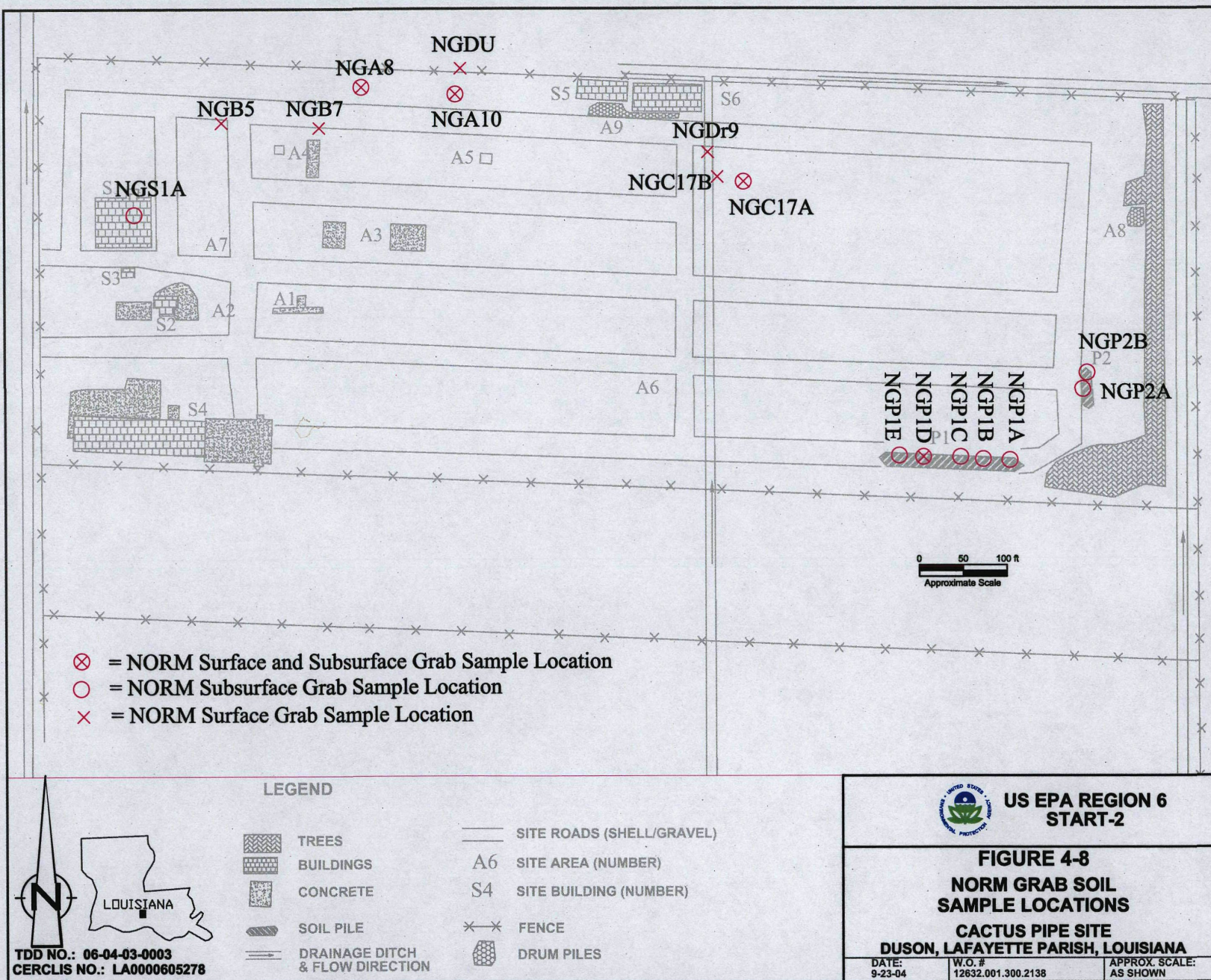


Table 4-1
Drum Inventory

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Table 4-1
Drum Inventory
Cactus Pipe site
Duson, Lafayette Parish, Louisiana

Drum Sampled	Drum number	Grid Location	Label Information	size (gal)	Contents	Other
yes	144	J5	Hazardous When Empty	55	Full	
yes	N/A	F4	none	55	Full	
yes	N/A	G7	Hazardous When Empty	55	Full	Closed Bung
yes	132	H13	none	55	Full	
yes	N/A	H13	Hazardous When Empty	55	Full	
yes	49	Outside S6	none	55	Full	Oily on Top
yes	105	Drum Pile	none	55	Full	Closed bung
yes	112	Drum Pile	Hazardous When Empty	55	1/2 Full	
yes	124	Drum Pile	none	55	Full	
yes	99	Drum Pile	Oilfield Chemical & Minerals	55	Full	Oily on Top
yes	28	C7	Hazardous When Empty	55	Full	Sludge/tar on top
yes	117	Drum Pile	Oilfield Chemical & Minerals	55	Full	Black top & Side
yes	118	Drum Pile	Oilfield Chemical & Minerals	55	Full	Black top & Side
no	143	J5	GSM	55	Rainwater	
no	145	J5	none	55	Rainwater	Open Bung
no	147	I5	none	55	Empty	Rust Holes
no	148	I5	none	55	Empty	Open Top
no	N/A	I5	none	55	Empty	Open Top
no	153	Warehouse	none	55	1/4 Liquid	On Side
no	154	Warehouse	Flammable Liquid	55	Empty	
no	155	Warehouse	none	55	Empty	Upside Down
no	156	Warehouse	Flammable Liquid	55	Empty	Upside Down
no	157	Warehouse	Aluminum Based Pipe Compound	3	Full	Plastic Can
no	158	Warehouse	Aluminum Based Pipe Compound	3	Full	Plastic Can
no	159	Warehouse	Aluminum Based Pipe Compound	3	Full	Plastic Can
no	160	Warehouse	Aluminum Based Pipe Compound	3	Full	Plastic Can
no	161	Warehouse	Aluminum Based Pipe Compound	3	Full	Plastic Can
no	162	Warehouse	Aluminum Based Pipe Compound	3	Full	Plastic Can
no	163	Warehouse	Aluminum Based Pipe Compound	3	Full	Plastic Can
no	164	Warehouse	Aluminum Based Pipe Compound	3	Full	Plastic Can
no	165	Warehouse	Aluminum Based Pipe Compound	3	Full	Plastic Can
no	166	Warehouse	Aluminum Based Pipe Compound	3	Full	Plastic Can
no	167	Warehouse	Aluminum Based Pipe Compound	3	Full	Plastic Can
no	150	I5	none	55	Trash	Open Top
no	168	F3	none	55	Trash	Open Top
no	169	F2	Delvac 15W40 Oil	55	Empty	Open Bung
no	N/A	F3	none	55	Empty	Open Top - On Side
no	N/A	D2	none	55	Rainwater	Rust Holes
no	20	B5	none	55	Trash	Open Top
no	N/A	B5	Trash	55	Trash	Open Top
no	17	C5	none	55	Rainwater	Open Bung
no	18	C5	none	55	Trash	Open Top
no	N/A	C5	Hazardous When Empty	55	Rainwater	1/2 drum
no	N/A	C5	none	55	Full	On Side
no	14	C5	none	55	Trash	Open Top
no	23	B6	none	55	Trash	Open Top
no	N/A	B6	none	55	Trash	Open Top
no	15	C6	none	55	Trash	Open Top
no	N/A	D6	none	55	Empty	Open Bung, On side
no	N/A	D6	none	55	Empty	Rust Holes
no	N/A	H7	Hazardous When Empty	55	Empty	Rust Holes
no	N/A	D7	none	55	Empty	Rust Holes

Table 4-1
Drum Inventory
Cactus Pipe site
Duson, Lafayette Parish, Louisiana

Drum Sampled	Drum number	Grid Location	Label Information	size (gal)	Contents	Other
no	26	C7	none	55	Trash	Open Top
no	25	C7	none	55	Rainwater	Open Bung
no	N/A	C7	none	55	Full	On Side
no	N/A	C7	none	55	Empty	On Side
no	29	B7	none	55	Trash	Open Top
no	N/A	C8	Hazardous When Empty	55	Empty	On Side
no	N/A	F8	none	55	Empty	On Side
no	N/A	F8	none	55	Empty	On Side
no	N/A	F8	none	55	Empty	Open Top
no	12	F8	none	55	Rainwater	Open Bung
no	8	F9	none	55	Trash	Open Top
no	4	E9	none	55	Rainwater	Rust Holes
no	N/A	C10	Hazardous When Empty	55	Empty	On Side
no	N/A	G13	none	55	Trash	On Side
no	N/A	H13	none	55	Empty	On Side
no	N/A	H13	none	55	Rainwater	Open Top
no	N/A	H13	none	55	Rainwater	Holes in Top
no	138	H15	none	55	Empty	On Side
no	N/A	H15	none	55	Empty	Open Top
no	N/A	I15	none	55	Rainwater	Open Bung
no	N/A	I15	none	55	Empty	On Side
no	N/A	E15	none	55	Empty	Open Bung, On side
no	30	Inside S5	none	55	Trash	Open Top
no	31	Inside S5	none	55	Trash	Open Top
no	N/A	Outside S5	none	55	Rainwater	Open Top
no	63	Inside S5	none	55	Trash	Open Top
no	64	Inside S5	none	55	Trash	Open Top
no	54	Between S5 & S6	none	55	Empty	On Side
no	55	Between S5 & S6	none	55	Empty	Rust Holes
no	56	Between S5 & S6	none	55	Empty	Open Bung, On side
no	57	Between S5 & S6	none	55	Empty	Upside Down
no	58	Between S5 & S6	none	55	Empty	Upside Down
no	59	Between S5 & S6	none	55	Empty	Rust Holes
no	60	Between S5 & S6	none	55	Rainwater	Open Bung
no	61	Between S5 & S6	none	55	Empty	Rust Holes
no	62	Between S5 & S6	none	55	Rainwater	Open Bung
no	50	Outside S6	none	55	Trash	Open Top
no	51	Outside S6	none	55	Rainwater	Open Top
no	52	Outside S6	none	55	Empty	Upside Down
no	48	Outside S6	none	55	Empty	Rust Holes
no	N/A	Outside S6	none	55	Empty	Rust Holes
no	69	Outside S6	none	55	Trash	Open Top
no	70	Outside S6	Hazardous When Empty	55	1/4 Liquid	Closed Bung, On Side
no	71	Outside S6	Major Chemical Company	55	Empty	Rust Holes
no	80	Outside S6	none	55	Empty	Open Top, On Side
no	77	Outside S6	none	55	Empty	Open Top, On Side
no	72	Outside S6	none	55	Empty	Open Top
no	73	Outside S6	none	55	Rainwater	1/2 drum
no	74	Outside S6	none	55	1/4 Liquid	On Side
no	N/A	Outside S6	none	55	Empty	Open Top, On Side
no	76	Outside S6	none	55	Empty	Open Top
no	75	Outside S6	none	55	Empty	Open Top, On Side

Table 4-1
Drum Inventory
Cactus Pipe site
Duson, Lafayette Parish, Louisiana

Drum Sampled	Drum number	Grid Location	Label Information	size (gal)	Contents	Other
no	N/A	Outside S6	none	55	Empty	Open Top, On Side
no	N/A	A17	none	55	Empty	In Brush Pile
no	N/A	A17	none	55	Empty	In Brush Pile
no	83	C17	none	55	Trash	On Side
no	81	C17	none	55	Trash	On Side
no	N/A	C17	none	55	Empty	On Side
no	N/A	C17	none	55	Empty	On Side
no	86	C17	none	55	Empty	Misshapen
no	N/A	C17	none	55	Empty	Rust Holes
no	N/A	C17	none	55	Empty	On Side
no	N/A	C17	none	55	Empty	On Side
no	N/A	C17	none	55	Rainwater	Holes in Top
no	129	G17	Hazardous When Empty	55	Rainwater	Holes in Top
no	107	Drum Pile	none	55	Empty	On Side
no	106	Drum Pile	none	55	Empty	Open Top
no	109	Drum Pile	none	55	Rainwater	Holes in Top
no	110	Drum Pile	none	55	Rainwater	Open Bung
no	111	Drum Pile	Hazardous When Empty	55	1/4 Liquid	On Side
no	104	Drum Pile	none	55	Rainwater	Holes in Top
no	N/A	Drum Pile	none	55	Unknown	On Side
no	128	Drum Pile	Oilfield Chemical & Minerals	55	Rainwater	Holes in Top
no	108	Drum Pile	Oilfield Chemical & Minerals	55	Empty	Rust Holes
no	N/A	Drum Pile	Oilfield Chemical & Minerals	55	1/4 Liquid	On Side
no	115	Drum Pile	none	55	Rainwater	Holes in Top
no	121	Drum Pile	none	55	Empty	Holes in Top
no	122	Drum Pile	none	55	Rainwater	Holes in Top
no	N/A	Drum Pile	none	55	Rainwater	Holes in Top
no	120	Drum Pile	Magcobar	55	Empty	On Side
no	N/A	Drum Pile	Oilfield Chemical & Minerals	55	1/4 Liquid	On Side
no	123	Drum Pile	none	55	Rainwater	Holes in Top
no	125	Drum Pile	none	55	Rainwater	Holes in Top
no	N/A	Drum Pile	none	55	Empty	Rust Holes
no	126?	Drum Pile	none	55	Rainwater	Holes in Top
no	96	Drum Pile	Oilfield Chemical & Minerals	55	1/4 Liquid	On Side
no	97	Drum Pile	none	55	Empty	On Side
no	98	Drum Pile	Oilfield Chemical & Minerals	55	Empty	
no	100	Drum Pile	none	55	Rainwater	
no	101	Drum Pile	none	55	Empty	On Side
no	102	Drum Pile	none	55	Full	Upside Down
no	103	Drum Pile	none	55	Rainwater	Open Bung
no	94	C25	none	55	Trash	Open Top
no	95	C25	none	55	Trash	Open Top
no	93	C25	none	55	Empty	On Side, Holes
no	90	C25	none	55	Empty	On Side, Holes
no	91	C25	none	55	Empty	On Side, Holes
no	92	C25	none	55	Empty	On Side, Holes
no	89	A25	Hazardous When Empty	55	Empty	On Side, Holes

Notes:

Drum number refers to numbers spray-painted onto drums during a previous investigation.

N/A indicates that no legible number was found on the drum.

5. SUMMARY OF RESULTS

This section describes the results of the radiation survey and sampling and analysis performed during the removal assessment.

5.1 RADIATION SURVEY

Several areas contained radioactive material above background, primarily in the northwest corner of the site. A map showing the results of both the on-site and off-site radiation surveys is presented as Figure 4-2.

5.2 XRF SCREENING

START-2 conducted in situ screening in 106 grids both on-site and on adjacent properties. Additionally, START-2 screened bagged soil collected from 19 grids that were too wet for in situ screening. The XRF screening indicated that 79 of the grids had lead concentrations above the proposed cleanup level of 500 milligrams per kilogram (mg/kg) lead, and 46 grids had lead concentrations below 500 mg/kg. The average lead values from XRF screening are presented in Table 5-1. The XRF screening results are presented graphically in Figure 5-1. The total surface area contaminated with lead above the 500 mg/kg action level is approximately 283,000 square feet. Figure 5-2 shows the areas for which XRF screening indicated the soil was above the 500 mg/kg action level. Assuming a one-foot depth of excavation, approximately 10,400 cubic yards of material would require excavation.

START-2 conducted XRF screening of surface and subsurface grab soil samples collected from five grids for which in situ screening had indicated elevated concentrations of lead in the soil. The XRF screening indicated that the elevated concentrations of lead were only present in the top 0 to 1 inch of soil. The average values from XRF screening of subsurface soil samples are presented in Table 5-2.

5.3 ANALYTICAL RESULTS

5.3.1 Lead Samples

On 9 and 10 September 2004, START-2 collected soil samples to determine the extent of lead contamination in the soil and sediments and to confirm XRF screening values. The results of laboratory analysis are presented in Table 5-3. The results of the lead analysis on the surface soil samples generally corresponded with the XRF screening results. A comparison of XRF screening results versus laboratory analytical results is presented in Table 5-4.

All eight of the sediment samples contained lead below 500 mg/kg. Two of the three subsurface samples collected from 4 to 8 inches below ground surface contained lead above the proposed 500 mg/kg action level. All three subsurface samples collected from 8 to 12 inches below ground surface contained lead below the proposed 500 mg/kg action level.

5.3.2 NORM Samples

State of Louisiana regulations assert that “before releasing the property for unrestricted use, the soil is decontaminated to a level not to exceed five picocuries per gram (pCi/g) above background of radium-226 or radium-228 unless other limits are approved by the department” (*Louisiana Code* Title 33, Part 15, Chapter 14, Section 10). Of the 29 soil and sediment samples collected by START-2, 22 contained radium-226 above 5 pCi/g. The laboratory data from the radiation analysis are presented in Table 5-5. Isotopes other than radium-226 and radium-228 that were included in the laboratory analysis will not affect the status of soil with respect to NORM regulations. However, the activities of the other isotopes may affect how materials may be shipped off-site according to the U.S. Department of Transportation (DOT) regulations.

All eight of the surface composite samples contained radium activity above the action level. The laboratory data suggests that most of the areas shaded in green on the NORM survey correspond to radium-226 or radium-228 activities above the 5 pCi/g limit.

Five of the six samples collected from soil pile P1 contained radium activity above the 5 pCi/g limit, suggesting that most of P1 will require removal. Neither of the two samples collected from

soil pile P2 contained radium activity above the 5 pCi/g limit, suggesting that P2 will likely not require removal, despite signs indicating that radioactive material is present.

Only one of the four subsurface soil samples (NGC17A-8-12) contained radium activity above the action level, suggesting that most of the NORM contamination is confined to the top 12 inches of soil.

The grab surface soil sample collected on the residential property north of the fence (NGDU) contained radium activity above the action level, suggesting that some NORM contamination has migrated north of the site.

The grab sediment sample collected near grid C17 (NGDr9) did not contain radium activity above the action level, suggesting that the NORM contamination did not migrate into the drainage path in this area.

Based on the radiation surveys and the laboratory analysis, the area of surface soil containing NORM contamination above the regulatory level of 5 pCi/g is approximately 63,500 square feet. Assuming that the majority of the contamination is confined to the top foot of soil, the volume of soil containing NORM contamination above the regulatory level of 5 pCi/g is approximately 2,350 cubic yards. During a cleanup action, the volume of material removed could be minimized using hand-held radiation detectors to verify that only contaminated soil is excavated.

5.3.3 TCLP Samples

On 9 September 2004, START-2 collected four surface soil samples for the analysis of TCLP metals. Laboratory analysis indicated that TCLP lead levels were below regulatory limit of 5.0 milligrams per liter (mg/L) for all four samples. The laboratory analytical results for TCLP metals analysis are presented as Table 5-6.

Figure 5-1
XRF Lead Screening Values for Surface Soil Grids

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Figure 5-2
Surface Soil Grids above Proposed Lead Action Level

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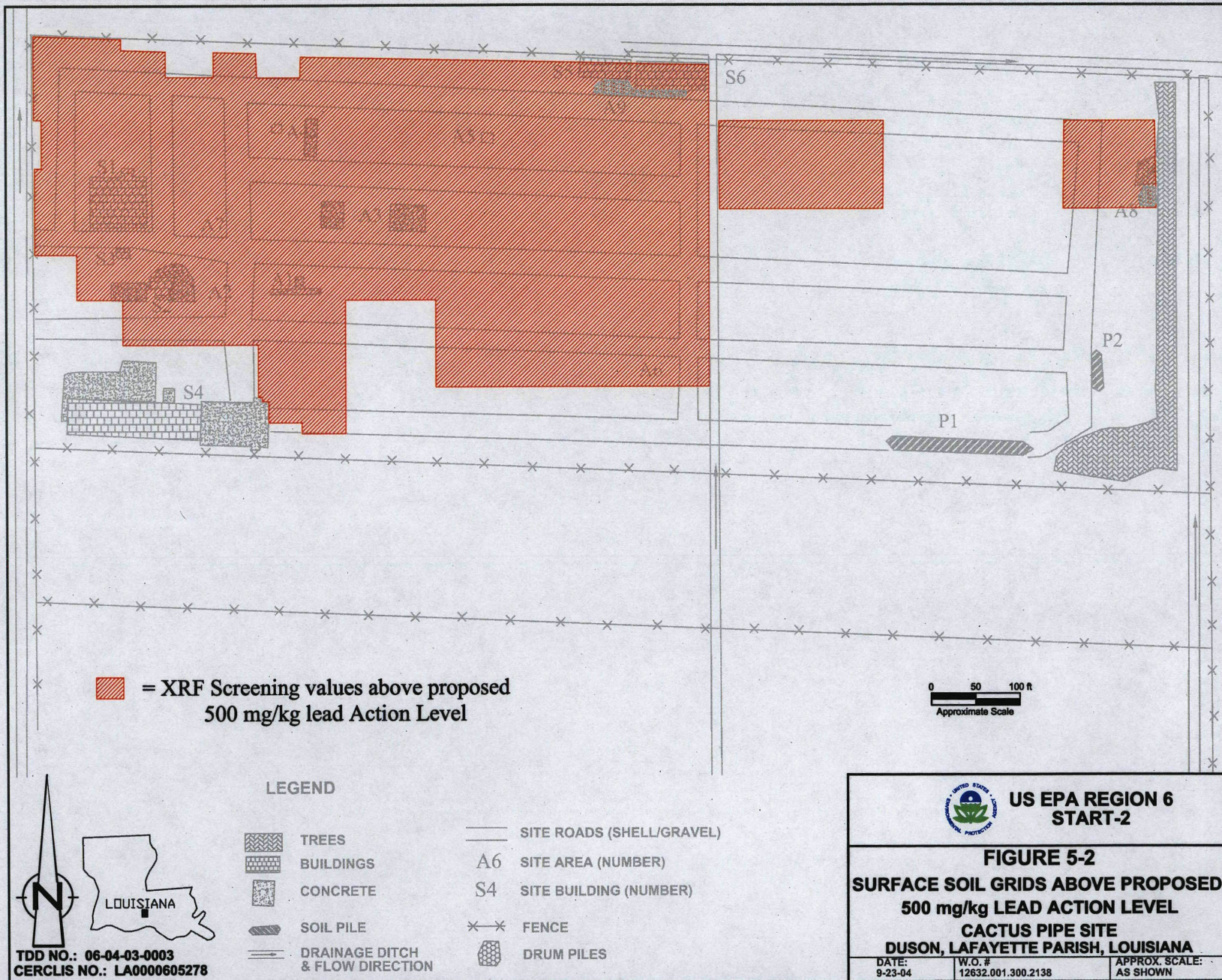


Table 5-1
Surface Soil XRF Lead Screening Values

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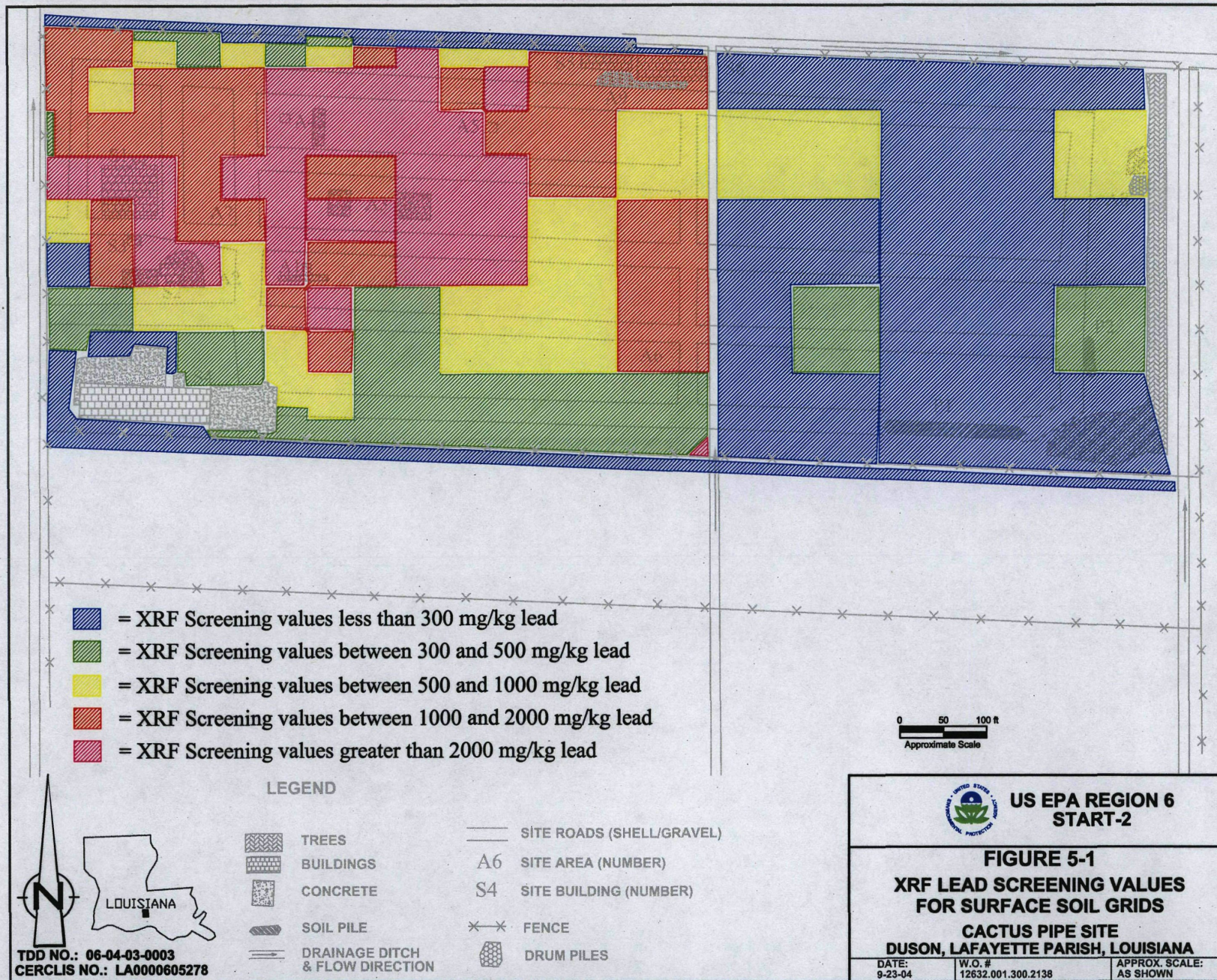


Table 5-1
Surface Soil XRF Lead Screening Values
Cactus Pipe Site
Duson, Lafayette Parish, Louisiana

Date	Grid Number	Average Lead Value (mg/kg)	Grid Size	# of Readings	Type of readings
7/27/2004	B1	1566	50 ft x 50 ft	10	in-situ
7/27/2004	A1	1593	50 ft x 50 ft	10	in-situ
7/27/2004	C1	3685	50 ft x 50 ft	10	in-situ
7/27/2004	D1	4482	50 ft x 50 ft	10	in-situ
7/27/2004	E1	661	50 ft x 50 ft	10	in-situ
7/27/2004	F1	250	50 ft x 50 ft	10	in-situ
7/27/2004	G1	379	50 ft x 50 ft	10	in-situ
7/27/2004	D2	2845	50 ft x 50 ft	10	in-situ
7/27/2004	E2	1851	50 ft x 50 ft	10	in-situ
7/27/2004	D3	2315	50 ft x 50 ft	10	in-situ
7/27/2004	E3	2164	50 ft x 50 ft	10	in-situ
7/27/2004	F2	1028	50 ft x 50 ft	10	in-situ
7/27/2004	F3	2526	50 ft x 50 ft	10	in-situ
7/27/2004	G2	355	50 ft x 50 ft	10	in-situ
7/28/2004	G3	810	50 ft x 50 ft	10	in-situ
7/28/2004	B2	939	50 ft x 50 ft	10	in-situ
7/28/2004	B3	1180	50 ft x 50 ft	10	in-situ
7/28/2004	C2	1425	50 ft x 50 ft	10	in-situ
7/28/2004	C3	1738	50 ft x 50 ft	10	in-situ
7/28/2004	B4	1432	50 ft x 50 ft	10	in-situ
7/28/2004	C4	1245	50 ft x 50 ft	10	in-situ
7/28/2004	D4	1863	50 ft x 50 ft	10	in-situ
7/28/2004	E4	1278	50 ft x 50 ft	10	in-situ
7/28/2004	F4	2002	50 ft x 50 ft	10	in-situ
7/28/2004	G4	896	50 ft x 50 ft	10	in-situ
7/28/2004	H4	402	50 ft x 50 ft	10	in-situ
7/28/2004	H5	488	50 ft x 50 ft	10	in-situ
7/28/2004	G5	731	50 ft x 50 ft	10	in-situ
7/28/2004	F5	866	50 ft x 50 ft	10	in-situ
7/28/2004	E5	1040	50 ft x 50 ft	10	in-situ
7/28/2004	D5	2461	50 ft x 50 ft	10	in-situ
7/28/2004	C5	1273	50 ft x 50 ft	10	in-situ
7/28/2004	B5	1418	50 ft x 50 ft	10	in-situ
7/28/2004	B6	2452	50 ft x 50 ft	10	in-situ
7/29/2004	C6	30496	50 ft x 50 ft	10	in-situ
7/29/2004	D6	2809	50 ft x 50 ft	10	in-situ
7/29/2004	E6	5310	50 ft x 50 ft	10	in-situ
7/29/2004	F6	3359	50 ft x 50 ft	10	in-situ
7/29/2004	G6	1404	50 ft x 50 ft	10	in-situ
7/29/2004	H6	661	50 ft x 50 ft	10	in-situ
7/29/2004	I6	536	50 ft x 50 ft	8	in-situ
7/29/2004	B7	4137	50 ft x 50 ft	10	in-situ
7/29/2004	C7	12153	50 ft x 50 ft	10	in-situ
7/29/2004	D7	1816	50 ft x 50 ft	10	in-situ
7/29/2004	E7	3355	50 ft x 50 ft	10	in-situ
7/29/2004	F7	1573	50 ft x 50 ft	10	in-situ

Table 5-1
Surface Soil XRF Lead Screening Values
Cactus Pipe Site
Duson, Lafayette Parish, Louisiana

Date	Grid Number	Average Lead Value (mg/kg)	Grid Size	# of Readings	Type of readings
7/29/2004	G7	3293	50 ft x 50 ft	10	in-situ
7/29/2004	H7	1273	50 ft x 50 ft	10	in-situ
7/29/2004	I7	813	50 ft x 50 ft	10	in-situ
7/29/2004	B8	2357	50 ft x 50 ft	10	in-situ
7/29/2004	C8	3420	50 ft x 50 ft	10	in-situ
7/29/2004	D8	1617	50 ft x 50 ft	10	in-situ
7/29/2004	E8	2751	50 ft x 50 ft	10	in-situ
7/29/2004	F8	1412	50 ft x 50 ft	10	in-situ
7/30/2004	B9	2456	50 ft x 50 ft	10	in-situ
7/30/2004	C9	3847	50 ft x 50 ft	10	in-situ
7/30/2004	D9	6338	50 ft x 50 ft	10	in-situ
7/30/2004	E9	4606	50 ft x 50 ft	10	in-situ
7/30/2004	F9	3691	50 ft x 50 ft	10	in-situ
7/30/2004	B10	1413	50 ft x 50 ft	10	in-situ
7/30/2004	C10	5900	50 ft x 50 ft	10	in-situ
7/30/2004	D10	2443	50 ft x 50 ft	10	in-situ
7/30/2004	B11	3641	50 ft x 50 ft	10	in-situ
7/30/2004	C11	1847	50 ft x 50 ft	10	in-situ
7/30/2004	D11	5744	50 ft x 50 ft	10	in-situ
7/30/2004	E11	2289	100 ft x 100 ft	18	in-situ
7/30/2004	G11	947	100 ft x 100 ft	18	in-situ
8/3/2004	I9	329	100 ft x 100 ft	18	in-situ
8/3/2004	I11	485	100 ft x 100 ft	18	in-situ
8/4/2004	G9	407	100 ft x 100 ft	18	in-situ
8/4/2004	C13	1180	100 ft x 100 ft	18	in-situ
8/4/2004	E13	596	100 ft x 100 ft	18	in-situ
8/4/2004	G13	664	100 ft x 100 ft	18	in-situ
8/4/2004	I13	360	100 ft x 100 ft	18	in-situ
8/4/2004	C15	886	100 ft x 100 ft	18	in-situ
8/4/2004	I19	215	100 ft x 100 ft	5	bagged
8/4/2004	I23	115	100 ft x 100 ft	5	bagged
8/4/2004	I21	103	100 ft x 100 ft	5	bagged
8/5/2004	E15	1146	100 ft x 100 ft	18	in-situ
8/5/2004	G15	1806	100 ft x 100 ft	18	in-situ
8/5/2004	I15	311	100 ft x 100 ft	18	in-situ
8/5/2004	C19	674	100 ft x 100 ft	5	bagged
8/5/2004	G25	423	100 ft x 100 ft	5	bagged
8/5/2004	G21	195	100 ft x 100 ft	5	bagged
8/5/2004	E25	194	100 ft x 100 ft	5	bagged
8/5/2004	SW	42	other	5	in-situ
8/5/2004	SOUTH	122	other	5	in-situ
8/5/2004	SE	485	other	6	in-situ
8/5/2004	PASTURE	184	other	13	in-situ
8/5/2004	A2	1091	50 ft x 50 ft	10	in-situ
8/5/2004	A3	678	50 ft x 50 ft	10	in-situ
8/5/2004	G19	333	100 ft x 100 ft	5	bagged

Table 5-1
Surface Soil XRF Lead Screening Values
Cactus Pipe Site
Duson, Lafayette Parish, Louisiana

Date	Grid Number	Average Lead Value (mg/kg)	Grid Size	# of Readings	Type of readings
8/5/2004	G17	195	100 ft x 100 ft	5	bagged
8/5/2004	I25	295	100 ft x 100 ft	5	bagged
8/5/2004	G23	202	100 ft x 100 ft	5	bagged
8/6/2004	E17	263	100 ft x 100 ft	18	in-situ
8/6/2004	C17	614	100 ft x 100 ft	18	in-situ
8/6/2004	A17	246	other	6	in-situ
8/6/2004	A19	194	other	6	in-situ
8/6/2004	A21	217	other	6	in-situ
8/6/2004	A23	216	other	6	in-situ
8/6/2004	A25	141	other	6	in-situ
8/6/2004	J7	401	other	10	in-situ
8/6/2004	H3	277	other	10	in-situ
8/6/2004	A4	382	50 ft x 50 ft	10	in-situ
8/6/2004	A5	525	50 ft x 50 ft	10	in-situ
8/6/2004	A6	316	50 ft x 50 ft	10	in-situ
8/6/2004	A7	797	50 ft x 50 ft	10	in-situ
8/6/2004	E23	184	100 ft x 100 ft	5	bagged
8/6/2004	C25	297	100 ft x 100 ft	5	bagged
8/6/2004	C23	289	100 ft x 100 ft	5	bagged
8/7/2004	A8	1632	50 ft x 50 ft	10	in-situ
8/7/2004	A9	2628	50 ft x 50 ft	10	in-situ
8/7/2004	A10	648	50 ft x 50 ft	10	in-situ
8/7/2004	A11	478	50 ft x 50 ft	10	in-situ
8/7/2004	A13	1405	100 ft x 100 ft	18	in-situ
8/7/2004	A15	1410	100 ft x 100 ft	18	in-situ
8/7/2004	comeaux1	51	other	14	in-situ
8/7/2004	comeaux2	31	other	12	in-situ
8/7/2004	duhon1	32	other	12	in-situ
8/7/2004	C3	39	100 ft x 100 ft	5	bagged
8/7/2004	E19	175	100 ft x 100 ft	5	bagged
8/7/2004	C21	258	100 ft x 100 ft	5	bagged
8/9/2004	E21	241	100 ft x 100 ft	5	bagged
8/9/2004	I17	175	100 ft x 100 ft	5	bagged

Notes:

The EPA OSC has proposed an action level of 500 mg/kg of lead for this site.

Shaded cells indicate exceedences of the proposed action level.

Table 5-2
Subsurface Soil XRF Lead Screening Values

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Table 5-2 Subsurface Soil XRF Lead Screening Values Cactus Pipe Site Duson, Lafayette Parish, Louisiana				
Grids	Depth Below Ground Surface (bgs)			In-situ Surface Screening Grid Average
	0-1 inch (mg/kg)	6-8 inches (mg/kg)	12-14 inches (mg/kg)	
C7	227	30	31	12,153
C3	3,088	101	39	1,738
D7	1,186	30	34	1,816
F7	1,041	30	27	1,573
D4	1,047	37	40	1,863

Table 5-3
Laboratory Results for RCRA Metals Analysis for Soil and Sediment Samples

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Table 5-3
Laboratory Results for RCRA Metals Analysis for Soil and Sediment Samples
Cactus Pipe Site
Duson, Lafayette Parish, Louisiana

	Sample depth below ground surface	Total Metals (mg/kg)							
		Mercury	Arsenic	Barium	Cadmium	Chromium	Lead	Selenium	Silver
Soil Samples									
LCB2	0-4 inches	0.22	ND	1960	ND	50.3	474	ND	ND
LCC21	0-4 inches	0.068	21.3	978	ND	21.9	189	ND	ND
LCC21D	0-4 inches	0.082	ND	1690	ND	29.5	287	ND	ND
LCC4	0-4 inches	1.35	ND	2340	ND	69	411	ND	ND
LCC4-4-8	4-8 inches	0.28	9.42	399	ND	16	37.9	ND	ND
LCC4-8-12	8-12 inches	0.072	8.08	376	ND	13.9	27.2	ND	ND
LCD5	0-4 inches	1.07	ND	2180	ND	216	1210	ND	ND
LCD5-4-8	4-8 inches	0.57	ND	1860	ND	47	1300	ND	ND
LCD5-8-12	8-12 inches	0.051	ND	1280	ND	11.7	64.9	ND	ND
LCD9	0-4 inches	0.1	ND	1290	ND	68.5	1760	ND	ND
LCD9-4-8	4-8 inches	0.21	ND	1180	ND	43	686	ND	ND
LCD9-8-12	8-12 inches	0.4	ND	1210	ND	61	726	ND	ND
LCE13	0-4 inches	0.23	ND	1710	ND	76.8	1080	ND	ND
LCE13D	0-4 inches	0.23	ND	1630	ND	53.6	777	ND	ND
LCG25	0-4 inches	0.037	9.59	463	ND	12.8	133	ND	ND
LCG25D	0-4 inches	0.036	11.2	370	ND	17.1	103	ND	ND
LCH6	0-4 inches	0.17	ND	1900	31.4	42.1	507	ND	ND
Sediment Samples									
LGDr1	0-4 inches	0.038	13.2	461	ND	10.6	25.7	ND	ND
LGDr2	0-4 inches	0.046	7.53	280	ND	9.93	22.5	ND	ND
LGDr3	0-4 inches	0.078	ND	1550	0.46	14	189	ND	ND
LGDr4	0-4 inches	0.13	ND	2820	2.42	23.7	266	ND	ND
LGDr5	0-4 inches	0.15	ND	2180	0.98	18.8	196	ND	ND
LGDr6	0-4 inches	0.072	2.74	1220	ND	8.56	40.9	ND	ND
LGDr7	0-4 inches	0.16	ND	1980	1.04	22.1	272	ND	ND
LGDr8	0-4 inches	0.088	5.93	1300	ND	13.5	129	ND	ND

Notes:

The EPA OSC has proposed an action level of 500 mg/kg of lead for this site.

No action levels have been proposed for this site for metals other than lead.

Shaded cells indicate exceedences of the proposed action level.

ND = Analyte not detected

Samples were analyzed by EPA Method 6010B.

Table 5-4
Laboratory Analytical Results versus XRF Screening Results for Lead

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<p align="center">Table 5-4 Laboratory Analytical Results versus XRF Screening Results for Lead Cactus Pipe Site Duson, Lafayette Parish, Louisiana</p>			
Sample Number	Sample depth below ground surface	Lead Analytical Result (mg/kg)	Lead XRF Result (mg/kg)
LCC4-8-12	8-12 inches	27.2	32
LGDr1	0-4 inches	25.7	38
LGDr2	0-4 inches	22.5	44
LGDr6	0-4 inches	40.9	49
LCC4-4-8	4-8 inches	37.9	65
LCD5-8-12	8-12 inches	64.9	78
LGDr8	0-4 inches	129	126
LCG25D	0-4 inches	103	146
LCG25	0-4 inches	133	154
LCC21D	0-4 inches	287	239
LCC21	0-4 inches	189	239
LCC4	0-4 inches	411	395
LCB2	0-4 inches	474	477
LCD9-4-8	4-8 inches	686	533
LCH6	0-4 inches	507	570
LCD9-8-12	8-12 inches	726	698
LCE13D	0-4 inches	777	754
LCE13	0-4 inches	1080	827
LCD5-4-8	4-8 inches	1300	891
LCD5	0-4 inches	1210	1447
LCD9	0-4 inches	1760	1745
LGDr4	0-4 inches	266	N/A
LGDr5	0-4 inches	196	N/A
LGDr7	0-4 inches	272	N/A
LGDr3	0-4 inches	189	N/A
<p>Notes: N/A = Not screened with the XRF because the soil in the sample was too wet. All XRF analyses were conducted on soil collected into a resealable plastic bag, and screened 5 to 10 times.</p>			

Table 5-5
Laboratory Results for NORM Analysis

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Table 5-5
Laboratory Results for NORM Analysis
Cactus Pipe Site
Duson, Lafayette Parish, Louisiana

Isotope	NGA8	NGA10	NGB7	NGA8D	NGP1A-B	NGP1B-B	NGP1C-B	NGP1D-B	NGP1E-B	NGP1D
Ra-226	261.72	386.95	8.485	224.68	13.424	3.471	29.901	210.22	116.92	622.05
Ra-228	3.794	4.958	ND	3.337	ND	0.733	1.158	5.065	3.001	14.933
Pb-210	76.546	36.028	5.29	55.152	6.312	3.569	19.24	58.923	37.582	180.41
U-238	ND	ND	0.869	ND	ND	ND	ND	ND	ND	ND
K-40	ND	ND	1.562	ND	3.353	7.569	5.088	5.978	4.101	12.69
Bi-214	197.3	289.23	5.013	174.28	9.342	1.279	24.894	174.59	89.504	487.49
Ra-223	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ra-224	20.902	29.793	10.467	368.9	18.44	ND	49.646	13.373	8.847	40.31
Pb-212	7.061	7.444	0.485	5.214	0.267	0.834	1.632	8.552	5.895	17.841
U-235	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cs-137	ND	ND	ND	ND	ND	0.135	ND	ND	ND	ND
Co-60	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Activity	831.277	1337.423	36.016	1033.297	61.61	7.981	156.061	676.248	366.598	1932.671

Table 5-5 (continued)
Laboratory Results for NORM Analysis
Cactus Pipe Site
Duson, Lafayette Parish, Louisiana

Isotope	NGP2A-B	NGP2B-B	NGC17A	NGC17B	NGC17A-8-12	NGS1A-16-20	NGA8-14-18	NC-EAST	NGA10-15-19	NGDr9
Ra-226	2.523	2.168	681.7	1287.5	25.885	3.029	2.78	36	2.21	1.86
Ra-228	0.736	0.21	7.507	14.886	1.111	0.791	1.2	1.2	0.861	0.306
Pb-210	2.76	3.311	169.5	126.86	15.7	3.861	1.58	16.2	2.18	3.41
U-238	1.509	0.891	ND	ND	2.744	1.78	1.88	4	2.05	ND
K-40	3.749	3.85	ND	ND	8.122	11.957	12.1	7.56	8.06	2.98
Bi-214	1.421	1.032	551.52	1051.7	16.985	1.196	0.932	30.4	0.8	1.06
Ra-223	ND	0.28	ND	ND	ND	ND	ND	ND	ND	ND
Ra-224	ND	2.059	34.596	74.713	ND	ND	0.656	ND	1.17	0.598
Pb-212	0.749	0.47	11.232	115.71	1.486	1.112	1.14	1.31	0.621	0.427
U-235	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cs-137	ND	ND	ND	ND	ND	ND	ND	0.178	ND	0.045
Co-60	ND	ND	ND	ND	ND	ND	0.06	ND	ND	0.195
Total Activity	8.717	7.278	2095.522	3812.917	84.181	10.202	22.587	139.564	47.258	15.79

Table 5-5 (continued)
Laboratory Results for NORM Analysis
Cactus Pipe Site
Duson, Lafayette Parish, Louisiana

Isotope	NGDU	NGB5	NCS1E	NCS1W	NCC2	NCC3	NCB3	NCA2	NCS1D
Ra-226	31.824	149.92	66.229	99.559	18.967	18.2	16.555	16.881	41.7
Ra-228	1.567	2.277	2.756	3.448	1.018	0.961	1.321	0.999	1.59
Pb-210	26.333	66.212	29.195	49.711	12.563	10.3	9.02	11.764	22
U-238	1.789	ND	ND	ND	1.345	ND	1.377	ND	3.12
K-40	9.692	ND	8.284	9.9	5.909	5.87	9.216	6.365	10.7
Bi-214	23.618	118.21	51.347	77.689	12.545	ND	11.89	12.483	30.2
Ra-223	ND	ND	0.737	ND	ND	ND	0.275	ND	ND
Ra-224	50.859	249.18	107.13	163.23	1.938	ND	2.212	ND	4.91
Pb-212	1.205	3.435	2.967	3.539	1.316	1.18	1.679	1.242	2.51
U-235	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cs-137	0.277	ND	0.706	ND	0.147	ND	0.272	0.124	0.109
Co-60	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Activity	197.407	873.062	385.302	596.776	83.715	79.303	83.229	69.144	161.016

Notes:

Samples were analyzed by EPA Method 901.1M.

All values are gamma spectroscopy activities measured in picocuries per gram (pCi/g)

ND = Not detected above the detection limit

The action level for NORM is 5.0 pCi/g for Ra-226 and Ra-228 as set by Louisiana Code Title 33, Part 15, Chapter 14, Section 10.

Shaded cells indicate exceedences of the proposed action level.

Table 5-6
Laboratory Results for TCLP Metals Analysis

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Table 5-6 Laboratory Results for TCLP Metals Analysis Cactus Pipe Site Duson, Lafayette Parish, Louisiana					
	TCLP Regulatory Limit (mg/L)	Sample Number			
		TCC9 (mg/L)	TCF9 (mg/L)	TCC6 (mg/L)	TCE6 (mg/L)
Arsenic	5.0	ND	ND	ND	ND
Barium	100.0	ND	ND	ND	ND
Cadmium	1.0	ND	ND	0.054	ND
Chromium	5.0	ND	ND	ND	ND
Lead	5.0	0.75	ND	ND	0.62
Mercury	0.2	ND	ND	ND	ND
Selenium	1.0	ND	ND	ND	ND
Silver	5.0	ND	ND	ND	ND
Notes: TCLP Regulatory Limits from 40CFR part 261.24. ND = Analyte not detected Samples were extracted by EPA Method 1311 and analyzed by EPA Method 6010B.					

6. SUMMARY

START-2 conducted removal assessment activities at the Cactus Pipe site during March through September 2004. Removal assessment activities included conducting a NORM survey, dividing the site into sampling grids, and conducting in situ XRF soil screening. START-2 collected soil and sediment samples for NORM, total metals, and TCLP metals analysis to verify the NORM and XRF screening results. START-2 conducted an inventory of drums located throughout the site and sampled and conducted hazard categorization tests on 13 of the drums. The hazard categorization tests indicated that two of the drums may be hazardous based on the characteristic of corrosivity. START-2 estimated that the total area contaminated with lead above the 500 mg/kg action level is approximately 283,000 square feet. Assuming a one-foot depth of excavation, approximately 10,400 cubic yards of material would require excavation. The total area contaminated with NORM above the 5 pCi/g action level is approximately 63,500 square feet. Assuming a one-foot depth of excavation, approximately 2,350 cubic yards of material would require excavation. However, most of the NORM contaminated material is also contaminated with lead. TCLP analysis indicated that site soils are not characteristically hazardous for disposal purposes.

7. LIST OF APPENDICES

- Appendix A Quality Assurance Sampling Plan (QASP)
- Appendix B Copy of Access Agreements Signed by Property Owners
- Appendix C Copy of Site Logbooks
- Appendix D Digital Photographs
- Appendix E Hazard Categorization Data Sheets
- Appendix F Analytical Data Summary Packages
- Appendix G Copy of START-2 TDD 06-04-03-0003 and Amendment A

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